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from your president's pen

By now you will have planned your trip to Miami for the twenty-third annual meeting of the A.S.D.C. I hope you will bring your families because the A.S.D.C. is a family society in the sense that a member most likely has indoctrinated his family circle with the idea that the dental care of children is about the most important job there is!

While the distaff side and the younger generation enjoy the comforts of The Shore Club Hotel, you will be attending the scientific and business sessions which will spur the A.S.D.C. on to greater success.

Your officers desire more than anything else the active participation of all members in Society affairs. Nothing is more important than the election of capable and interested officers to carry on the work of providing "More Adequate Dental Care for Children." To this end I request you to submit the names of those you deem fitted for these tasks to the nominating committee. This may be done most easily by sending the names of your nominees to our efficient secretary, Al Anderson.

While we must have a capable group of staff officers we must not forget the most important person of all—the "rank and file member". This year many Units have expressed a desire to see a junior or student membership plan placed on a firm basis. Although provided for in our Constitution and By-laws, this type of membership has not received the attention or encouragement it deserves. If you have an idea of how we can implement such a plan it would be most helpful to also write Doctor Anderson.

My best wishes to you for a pleasant summer and an enjoyable meeting in Miami.

HUGH KEENAN

A Digest of the Practice of Pedodontics

SAMUEL D. HARRIS, D.D.S., F.A.C.D.

About The Book and the Author

THIS is intended to be a "Readers Digest" sort of compilation of pedodontics in practice. Because Sam's practice is highly successful and his technique and methods of practice frequently differ from those generally advocated or employed, we feel that this presentation should stir considerable discussion, much of which will be reprinted in the Journal of Dentistry for Children and later carried in the book "A Digest of the Practice of Pedodontics."

This Sam has given to the A.S.D.C. He has stipulated that all profit shall go to a fund to initiate a Foundation Fund for the A.S.D.C. for the benefit of children. Inasmuch as he has already been asked for the opportunity to print this book in Spanish, he has indicated that profits on the book in any other country shall go to a fund for initiation of a similar fund in the respective country's society of dentistry for children.

— — —

Tho' only fifty, Sam Harris is considered by some as the "Old Man River" of Pedodontics.

Finishing acadamic training at Ann Arbor in 1924 and at Forsyth one year later, Sam started his organizational spade work. After two years of correspondence, with fifty-two other stalwarts in dentistry he organized the American Society of Dentistry for Children at the A.D.A. meeting in his home town of Detroit in 1927. He served as its first secretary and its fifth president. He launched the Review of Dentistry for Children in 1932, and acted as its editor for eleven years.

Sam is a charter member of the American Board of Pedodontics and of the American Acadamy of Pedodontics. He is member of the American College of Dentists and of the International Acadamy of Medicine and Dentistry. He is an honorary member (Scroll one) of the American Society of Dentistry for Children, the London (Canada) Acadamy of Dentistry, the Cuban Society of Dentistry for Children, and the Chilean Society of Dentistry for Children.

He is listed in American Dental Leaders, the History of Michigan (in compilation), Who's Who in America and International Who's Who.

Sam's avocation is farming and teaching the Dale Carnegie course. He was the first elected president of Dale Carnegie Club International and is at present a member of its Board of Directors.

Ethel, Sam's good wife, shares his extreme enthusiasm for dentistry. Between them they have raised three sons—John, David, and Paul. John and David are at present enrolled in predental schooling at Ann Arbor.

Sam's most recent work in pedodontics—his assistance in the organization of societies of dentistry for children throughout the world and his compilation of this book are evidence that "Old Man River" is still rolling along.

A. E. S.

Preface

IN THE last two decades several good books have appeared on dentistry for children. Among those widely used, and herewith also recommended, are the publications of McBride, Brauer, and Hogeboom.

Here is simply another approach to this important subject. It is the intent of this publication to be a particularly concise, intensely practical compendium of thirty years of pedodontic experience and present office procedures, with selected discussion by other dentists.

A recommended brief list for supplementary reading appears at the book end.

When and Where to

CHAPTER I

THE public and the dental profession see eye to eye in respect to when the best dental program should begin for the individual. The public concedes, "I should have taken care of my teeth earlier." The dental profession advises a good dental program must begin with the child.

Today more children receive sufficient and early care; more dentists serve an adequate ratio of children. The dental profession and the public are "getting together." More and better information is reaching the grass roots of the general public and of the healing professions.

Dentistry for the child is "growing up" as a popular need. More people know how essential it is, more dentists lean towards pedodontics for pleasure and profit. Perhaps that is why dentistry for children has grown so rapidly in the past two decades, both as a specialty and as a significant part of family practice.

The dentistry taught so well today by dental colleges, demonstrated at dental society meetings, and garnered from our dental publications is definitely making dentists more proficient in serving children. The principles and technique of pedodontic practice have improved in the past twenty years. Perhaps this is the reason why pedodontics is becoming at least as attractive to the family dentist as other fields of dentistry. The progress yet to take place in this most recently popular phase of dentisry is a challenge to each of us. We hunt the faster, the shorter, the more beneficial, the more profitable way.

What follows is entirely from practice. A great deal in the following chapters therefore will be "new," much even "unorthodox"; however all has been used for at least five years and much for as many as thirty. It is my sincere belief that these procedures may help other practitioners to make dentistry for children increasingly attractve.

I have dedicated these chapters to the family dentist because I have long held to the conviction that we must look mainly to him if we are successfully to promote dentistry for children. Many more family dentists will need to devote a large part of their practice to children; otherwise commendable as dental service for adults may be, the public need is such that we will be draining the ocean with a tin cup. To realize its most promising potential, dentistry must serve more and

more children. Dentistry for children is the most fruitful, the most realistic field for preventive dentistry.

These writings may stimulate questions, discussions, and differences. We welcome the differences. Mail your comment to this publication; also send your "pet" office tricks to serve children better. What "works" for you may very well work for me—and the next fellow. We in dentistry for children all gain from such "shop-talk."

Child Management

CHAPTER II

"The ability to control children in dental practice is not spectacular nor sensational. It is not the endowment of a chosen few. Child management in dentistry is simply a systematic application of child behaviorism to a special environment. It is largely common sense applied with a feeling of confidence."

I WROTE this twenty years ago, I believe it even more firmly today: Children can be managed successfully. Neither age nor personality, nor the lack of a special fondness for children need deter one. The following may prove helpful suggestions.

(a) *Group children:* Let us devote specific time, say Saturday morning, exclusively to children. This is specialization in part. It carries the advantages familiar to specialization.

Time is then available for a calm, unhurried service for each child patient. There is no exhaustive shifting of technique, armamentarium, and psychology from adults to children and from children to adults. Each small patient leaving the treatment room satisfied emanates contentment to the next little patient. The new patient perceives and quickly imitates. "Nothing succeeds like success."

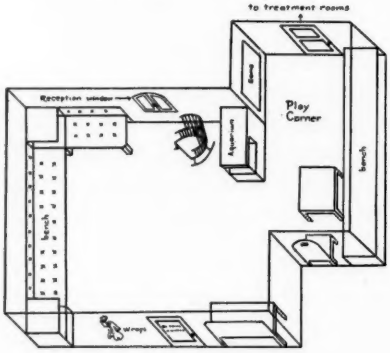
Another advantage of grouping children's appointments is that it focuses the adult's attention to the fact that we provide children with a special time. By implication, we furnish them with an exclusive service. This specialization cannot help but attract favorable publicity.

(b) *Arrange definite appointments:* We call appointments "reservations." (Figure 1.) This emphasizes to the parent the fact that time has been set aside specifically for her child—for her child alone.

We reserve fifteen to forty-five minutes for each patient seeing young, difficult, or nervous children close to ten in the morning; or two in the afternoon. These are the periods of "high tide" in a child's calm and courage.

	Receipt	Reservation
24 Hours Notice is necessary to cancel a Reservation Without Regular Charge		
WOODWARD 1-3000		

FIG. 1. Reservation card



Reception room with play corner

FIG. 2

(c) *Purchase a few inexpensive toys and games:* I suggest that you rule out special playrooms and special equipment until *after* the children's part of your practice is well developed. Then, if you like, you may consider them.

Playrooms and special equipment are expensive; moreover they are not generally the "open sesame" to a successful practice. They are nice—not necessary. A corner of the reception room with a small table and chairs, and a picture or two is sufficient to make John or Mary feel at home (Figure 2).

A few choice selections from the local "five and ten" will attract the child's favorable interest—something to divert his attention for the few minutes that he may be kept waiting. This is all that is required.

(d) *Treat children with kindness and consideration:* Let us be relaxed and pleasant but not indulgent. We place children on their own responsibility quickly. The presence of the mother in the treatment room helps at the first visit; thereafter it is generally harmful.

I have come to use the following as routine procedure for conditioning the child.

After the nurse has recorded the requisite business information, she brings the

parent and the child into the treatment room. She then elevates the child in the chair and directs the mother to stand at its foot.

Left alone with the parent for a moment, the child becomes familiar with the new environment and accustomed to "chair-height" perspective. When I enter, I need but say, "Good morning, Mrs. Brown. So this is Mary's first trip to the dentist. Mrs. Brown, using this instrument (an unattached contra angle with a Young rubber cup), will you please show me how you have taught Mary to brush her front teeth." It is my purpose to pass the child imperceptively from the familiar which she more readily accepts to the unfamiliar.

After the mother has complied, I take the contra angle. Suiting my action to the word, I say, "Yes, that is right—down on the top ones, up on the bottom." (Fixing the contra angle in the hand piece . . .) "Now show me again. That is right, and we do it this same way with the back teeth." Now moving the cup to a central incisor, and starting the engine slowly, lightly running the cup over the teeth, I say, "This is the same as your brushing only it is more fun."

My essential interest at this point is not so much the method which the mother uses to brush the child's teeth. Touching on the method this way, does suggest to her the technique preferred for home brushing; however there are two additional reasons for having the mother handle the contra-angle. First, doing something physical tends to relieve her of the tenseness which she experiences. Sometimes the parent's concern is more acute than that of the child. Second, the child accepts this pleasant procedure more readily because mother administers it first. Thus conditioned to its favorableness, the child readily accepts the dentist's prophylaxis.

The ice is broken. No extra time has been consumed with child conditioning; and, with rare exception, this method "works." It works wonders in getting the management problem well under control—and quickly.

CHAPTER III

Prophylaxis

"Enter Here First."

THE prophylaxis, the first visit encompasses more than just cleaning the child's teeth. It is the "send off" to good management. Good management is fundamental to success in operative dentistry for children. This visit also presents an ideal situation for introducing casual explanation of diet, home care, and the routine of charging. Prophylaxis is thus a door through which to enter the child's confidence and proceed on to the parent's understanding and cooperation.

The mechanics of prophylaxis is similar to that used for the grown up only gratifyingly simpler.

When the prefatory Young cup has been used on all the surfaces, a small, inverted carborundum stone (figure 3) is moved lightly over the primary teeth to

FIG. 3 Prophylaxis Armamentarium

break up the cervical deposits and to help remove the stain. Employed judiciously, this stone polishes off the debris and smooths the roughened enamel. A cone-shaped bristle brush, generally without a dentifrice, is then used to complete the prophylaxis.

With older children, disclosing solution is applied sparingly on a pledget of cotton to one quadrant at a time. A dentifrice and tape floss may be used.

A desirable formula for disclosing solution is*:

Iodine	50 parts
Potassium Iodide	15 parts
Zinc Iodide	15 parts
Distilled Water	240 parts
Glycerine	240 parts

A desirable formula for an office dentifrice is†:

Calcium carbonate, precipitated	95 parts
Castile soap	3 parts
Saccharin	1–8 parts
Oil of birch	1 part
Oil of peppermint	½ part

In future prophylaxis, disclosing solution may be applied to the teeth at the outset. A small cone-shaped bristle brush removes the soft surface debris. Special, thin lightning and sandpaper strips are also used. At the end of the prophylaxis, disclosing solution may be applied again—this time to check the results. Dental tape is used to polish the proximal surfaces of the teeth, the open end of a short cotton roll to massage the gums and teeth vigorously.

Ask the child to bring his tooth brush to the first of the periodic visits subsequent to completing his dentistry. The brush bristle alignment should be straight or slightly convex. The brush should be sufficiently small to reach conveniently all sections of the child's mouth. The sweeping motion, down from the gums of the upper teeth and up from the gums of the lower, is a simple method for the

* From Pharmachology and Dental Therapeutics, 9th edition.
† From Accepted Dental Remedies, 1935.

child to comprehend and employ. After breakfast and before going to bed are the most effective times for tooth brushing. Up to the time of his sixth birthday, the parent also should brush the child's teeth occasionally.

The brush should be dry and stiff. Water should not be employed to soften or wet the bristles prior to use. In fact, it is desirable to use the dry brush for a moment before applying the dentifrice.

Tooth paste is preferable for young children, tooth powder for older ones.

The first office visit for prophylaxis and examination is best made when the child is approximately two and a half years of age. Thereafter periodic visits for prophylaxis should be made each three to six months. The first periodic visit following the completion of the initial services should be scheduled in six months. The appearance and condition of the teeth at that time will indicate whether future visits need be more frequent.

CHAPTER IV

Examination

"A House Should Be Built With a Blueprint."

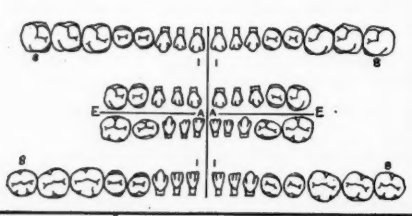
SERVICE to be worth-while must have a plan. Dental examination for a child need not entail extra time in order to be adequate. A good housekeeper does several chores at one time. While dinner is cooking, she sets the table, tends to the children, listens to Mary read, etc.

In the same vein, the dentist can do much "examining" in the process of performing a prophylaxis studying the child's appearance and general condition. Has the child's health been influenced by illness, by faulty diet, by endocrine disturbance, etc?

The dentist then makes a careful examination of the child's teeth and oral tissue. He notices the cavities, pulp involvements, and required extractions; the arrangement of the teeth and undesirable mouth habits; periodontial condition and home care.

If he should desire special record cards, a simple and relatively adequate type of record is shown (Figures 4 and 5).

You will note here on one side of the card that the outline and the display arrangement of the permanent and primary teeth are such as to permit a ready and accurate record of the conditions present. On this side of the examination card are recorded from time to time various items, personal rather than dental in text (Figure 4). This information is valuable. It helps the dentist to understand his patient better as well as to gain the child's friendship and confidence. It is only when the child thoroughly trusts him that the dentist can better serve. The effect of "remembering" these details long after they transpired has influence upon the parent also.



NAME John K. Jones
PARENTS NAME Paul K.
ADDRESS 1806 Ford Blvd.
TELEPHONE Tr-85653
REFERENCE Dr. S. Smith 1/12/48
REMARKS

DATE	INFORMATION
Sept. 5, '45	Brother Bobbie - 10 mos.
" 12, 46	Started school. Likes dogs better than school.
March 10, '47	Very enthusiastic about marbles.
June 20, "	Excited about new baby sister, Eleanor - 3 days old.
Sept 2, "	Bobby coming in next visit. Likes electric trains.
Dec 20, "	Joins "four square" club. Report card: all "ones".
March 8, '48	Children all confined with Whooping Cough.
June 11, "	Learned to swim at camp. Wants to be Boy Scout.

DR. SAMUEL D. HARRIS, 2312 DAVID BRODERICK TOWER, DETROIT 26, MICHIGAN

FIG. 4. Information side of patient's card

Name Dolot Beverly Address 13594 Dean
Parent's Name G. Reference Mrs. Sago Telephone TW 1-3869
11-20-51

Date	Tooth No.	Services	Fillings	Time	Charge	Cr.	Date Paid	Balance
8-7-51		P BW			8	8		
8-23-51	ad de		4A		12	12		
9-15-51	de	Ca	4A		14	14		
11-6-51	edde	Ca 2 Novo. SFnt.	5A	--	26	26		
5-6-52		P		--	3	3		
11-4-52	e	P CGRW		--	16	8		8
						8	1-6	
8-20-53	6 6	P	4A	--	15	15		
4-9-54		P		--	3	3		
		BW (bite wings)						
tooth designations →		P (Prophylaxis)	A (Amalgam)					
Date at top →		Ca (calcium hydroxide capping)		--	(6 months)			
in date of last		N (Novocaine)						
sodium fluoride		SF (sodium fluoride)						
series.		CGRW (Beechwood Creole Eugenol Paste	Red and white cement)					

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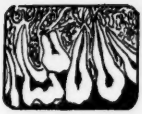
FIG. 5. Record side of patient's card



Premature extraction.
Drifting and impaction.

Interproximal caries.
Premolar bud missing

Prolonged retention.
of primary cuspid.

Supernumerary
teeth.

Fractured incisors
later fused.

FIG. 6. Surprise Roentgenray Evidence

Bite-Wing Pathology

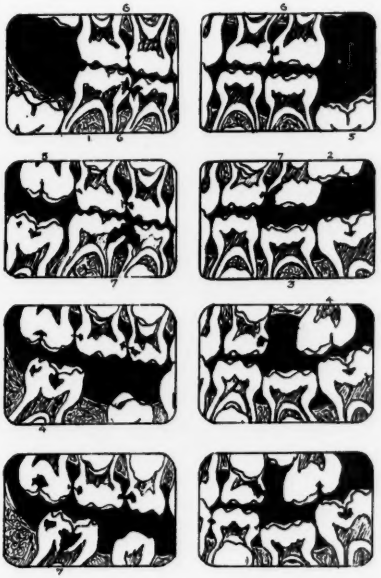
Age:

four

six

eight

ten



1. Missing permanent bud.
2. Ectopic eruption.
3. Submergence.
4. Mesial drift
5. Fissure breaks.
6. Proximal caries
7. Pulp involvement.

A progressive Composite

FIG. 7

The reverse side of the card carries the information of dental services performed from visit to visit (Figure 5).

In keeping accurate records, plaster casts are sometimes used. Full mouth roentgenograms are often essential to a complete examination; however each new patient should have at least posterior bitewing roentgenograms. Even if the parent is not convinced of the value of bitewing roentgenograms and is not willing to pay a nominal fee for the service, as happens on rare occasion, I deem it advisable to take x-rays for my own benefit. I consider taking them for each child patient at least once every two or three years a sound investment (Figure 6).

Bitewing films are very useful in dentistry for children. An illustration revealing the presence and progress of various dental abnormalities is shown (Figure 7).

In review, accurate records are indispensable for successful results with children. Posterior bitewing roentgenograms should be recommended during the child's initial series of visits, and should be suggested once every year thereafter.

CHAPTER V

Economics

"Labor Should Be Worth Its Hire."

IF TIME is wasted in conditioning or in management of the child or in "make-overs," whatever the parent may pay is too much; moreover this is profitless employment for the dentist.

For this reason, in the chapter on management, I emphasized a procedure that draws to the core of service speedily. In the chapters on operative procedures, I shall suggest methods that will carry us through the operative services quickly and effectively.

Much of the discussion about the economics of Pedodontics centers about the fee. Shall it be by the hour, by the service, by the year, by the visit? I have tried each of these methods exhaustively.

My experience has been that the by-the-hour technique, if used, must never be quoted as such to the parent. The dental fee will seem large in comparison with other by-the-hour artisan charges. None of these include the terrific overhead and initial investment in education and time that the dentist bears. Furthermore, the parent may become concerned about the slow pace at which the dentist seems to progress, may think the charge for broken appointments unfair, etc. All this discontent leads away from the goal we are seeking.

A fee at the outset based on all the services required proved more satisfactory. The dentist quotes the fee at the first visit—"There are these services to be performed in these teeth, Mrs. Brown." (Point them out.) "The total charge is so much."

This method is sometimes troublesome because Mrs. Brown looks but does not "see." She cannot visualize what the dentist plans to do. The extraction looks like a simple little snag that can be easily tipped out—she cannot see the long root. The proximal cavities show no larger than a pinhead from where she is standing. The incipient occlusal cavities do not even show to her untrained eye.

Even after an explanation, it still may seem "too much" based on what she can see. This type of charge leaves something to be desired for the reason that the parent sometimes cannot conceive the amount of work to be accomplished no matter how long or how excellent an explanation the dentist gives.

By-the-year charges sound good on paper. During bad times they do attract those who otherwise might not have acceded to dental services. The trouble is that the patient who needs few services finds this arrangement unprofitable and unattractive. The other type of patient proves to be unprofitable for the dentist. A sliding scale, more for the patient with prospectively more service and vice versa, does not work well because of such parent discussions: "Go see Dr. Sound. He charges me only blank dollars per year and does all my child's dentistry." The idea is attractive to the parent whose child needs much service. She is apt to be offended when the dentist quotes her a fee higher than that quoted her friend.

Our office likes to charge at the end of each visit for the services performed. The advantage is that the parent can see what has been done. The ability to see that for which she is paying helps considerably. The filling always looks larger than the cavity. The space left by the extracted root looks more dramatic than the little spicule.

The visit charge is made each visit and only for the services performed. It is quoted by the nurse to the mother at the time she is giving her the next appointment. This method has numerous advantages over every other system we have tried. It breaks the fee into pieces that are more readily assimilated by the parent —both psychologically and economically. It permits a pay-as-you-go arrangement that is more convenient for the parent and more sound for the dentist. The fee is stated when the time consumed and the services rendered are fresh in the parent's mind and readily observable.

This method of charging has been by long odds the most effective in my practice. It is so much better than quoting a fee at the outset when the needed services cannot be visualized—or at the end of the month when they are forgotten.

With this arrangement, if the technical services can be effectively completed in a reasonable length of time (they can be completed for the average child in two to four visits of thirty minutes each), the parent with rare exception, will be well satisfied and the dentist will be well paid.

Certain economic by-products to including children in a family practice should be mentioned before concluding this chapter.

Adult practices grow old fast without children. Such practices become dissipated by death and change. The adult patient may not be there twenty or thirty years from now. The child patient is more apt to be. In fact, his number is likely to be multiplied by a family. Everything else equal, time and adults in a practice tend to reduce it—children, to increase it.

Further, children are loud boosters. They shout their praise from the housetops. Instances are numerous when an older dentist lost his practice to a young fellow who had come into the neighborhood and had won over the parents by satisfying their children. Many an old timer who has failed in his practice has rebuilt his income, his faith in himself and in dentistry by going "all out" for the children.

In *many* ways *good* dentistry for children does pay.

Please use this page to send your comments about the preceding chapters to the Editor or Dr. Sam Harris, 2312 Broderick Tower, Detroit 26, Michigan.

Dr. Oscar B. Markey is Chief of the Psychiatric Staff, Mt. Sinai Hospital in Cleveland; Formerly Associate Professor of Mental Hygiene, Western Reserve University; Diplomate, American Board of Neurology and Psychiatry; Consultant in Psychiatric Problems for the Shaker Heights and Cleveland School systems. Dr. Markey is at the right, and is explaining the Steps to Dr. Warren Guthrie, Director of the Department of Speech, Western Reserve University:

Steps in Development From Infancy to Maturity

The first step symbolized by the bottle beside the sitting infant is the oral or "I want" step. On the second step is the toddler with a clock which symbolizes his rate of personal-social growth. This includes the "should" or "must" phase. On this step the next phase of growth is implicit. It is the "display" or "show off" phase, which is completed by 3½ or 4 years. On the third step is the young boy between 6 and 12 who is trying to act manly. This is symbolized by the boxing gloves and represents conflict with the mother's protective need to have the child be gentlemanly. This third step is called "latency". The fourth step is adolescence or "I am readying" for maturity. The jalopy symbolizes his drive to prove himself "already a man" by a false "overdrive". On the top step the young man is "ready" to prove himself manly and to complete his character, which is psychobiologically incomplete, through a feminine sweetheart who can reach her maturity only through him.

Orthopsychiatry: Its Part in Prevention of Childhood Distress*

Oscar B. Markey, M.D.

DR. George W. Teuscher, past-president of the American Society of Dentistry for Children, took part in a pediatrics symposium at the American Academy of Pediatrics in Chicago on October 17, 1951. He caught the nuclear factor in the practice of children's dentistry when he said that understanding the child requires "a thorough knowledge of growth and development." He further recognized the fact that the best rules which can be laid down for children are of no value unless the children themselves can accept them. Professional training and objectives are of little value unless our patients can be helped to accept them. This involves the application of wisdom that centers on the belief that the patient must feel accepting of the doctor if he is to be expected to accept the doctor's attention and recommendations. The whole child, grown out of the experience of his inner life and his inter-personal relationships with his family, is involved in every dental situation, so it is illusory to seek short cuts in an effort to by-pass the child's fundamental personality growth trends. The pedodontist as well as the pediatrician and the orthopsychiatrist must establish a deep orientation in dynamics of children's personality growth.

The orthopsychiatrist has become a primary force in the understanding of the child's mental life. Just as orthodontics means the straightening or keeping of the teeth in straight condition, orthopsychiatry stresses "straight" personality growth as the fundamental defense against potential emotional and mental disorders. This branch of medicine, more commonly called child psychiatry, arose out of the gradual appreciation of the fact that neurotic and psychotic disorders of adult life generally arise in people who were once "normal"; people who as children appeared to be well yet were troubled with hidden tensions and conflicts which eventually became morbid mental states. It was gradually learned that the cranky infant who resisted feeding schedules, the toddler who had severe temper outbursts, the young child who was failing in school in spite of good intelligence, and the adolescent who was severely withdrawn or aggressively impulsive needed respectful attention if more fixed adult troubles were to be avoided. The Child Health Movement, which reached great heights soon after the end of the First World War, brought about great strides in preventive pediatrics and for the first time emphasized puzzling personality and conduct reactions as obstacles to healthy growth. Troubled infants who couldn't sleep, children who were unable to throw off infantile habits like thumb sucking and bed wetting, often presented healthy physical bodies. The attitudes of the young child needed better understanding and treatment. Percentage feeding formulas, measured air spaces for sleeping rooms, specific amounts of vitamins, the proper clothing of children, all were important and yet were not enough to guarantee healthy emotions. The whole family, it was real-

* From an address delivered to the American Society of Dentistry for Children, in Cleveland, Ohio.

ized, was involved in each child's growth and the intra-familial conflicts, which are universal, drew the primary attention of psychiatrists, particularly the followers of Freud, whose search for truths about the Unconscious has brought about fundamental changes in psychiatric thinking and practice.

The developmental approach to the study of children's illnesses and maladjustments was essentially the product of Freud's study of the unconscious mind. The first four years of an infant's life are almost entirely forgotten, probably because cerebral development is yet incomplete and partly because the infant's life is largely (at first entirely) emotional and many painful conflicts have to be "forgotten." In the practice of psychoanalysis, the physician helps the patient to recall (some of these) forgotten experiences, yet few can be recovered out of these first four years of what might be called "normal amnesia." Psychiatrists, with the aid of free association and dream material, or play situations in dealing with children, can sometimes help patients to recover deeply buried material. A story is told of a synthetic drug which we shall call "Rememerin," a drug used to melt away normal inhibitions and thereby free repressed material. This drug, presumably far more powerful than the barbiturates used today as "truth serums," was being discussed by three psychiatrists. The first gave an intravenous injection of this amazing drug and the patient went into a violent emotional re-enactment of an infantile separation experience from which he had never recovered: the last suckling at his mother's breast. On recalling the full tragedy, the patient was presumably relieved of all of the symptoms he had built as a cover-up for this overwhelming loss. The second psychiatrist went him one better. His patient, he said, was able to reactivate the birth experience and the excruciating moment of separation from the mother as the umbilical cord was cut. His symptoms were also relieved by this fulminating recollection, of course. The third psychiatrist was able to bring a patient back to an even earlier scene, a scene which we all know to be entirely unconscious and impossible to bring to the surface. This drug, however, bestirred even this primitive experience. The patient was able to recall that he went to a picnic with his father and came home with his mother.

To take so lightly the possibilities of buried early experience may not be appropriate in such a serious presentation as this, but it has its value in reminding us that an understanding of the unconscious is fundamental to an understanding of human behavior. Psychoanalytic techniques are the tools which dynamically trained psychiatrists and psychoanalysts use in clearing the mind of emotionally crippling ideas which may have been translated into psychosomatic disorders, resistances to medical or dental care, morbid depressions, personality weaknesses and the like. The pedodontist must take his place among the other specialists in the care of children who aim to prevent distortions in total growth and to treat disorders which too often arise out of errors in early childhood family relationships and training. The pedodontist recognizes congenital defects of the oral mechanism and knows that dento-facial structure is generally normal at birth and that it is up to him to help keep it that way. He knows from experience, however, that he cannot abruptly insist that everything must become secondary to the problem of straightening a child's dental alignment or even the prevention and treatment of dental defects. The well adjusted child, he knows, is less likely to have trouble

like this and is better able to cooperate when treatment is necessary.

Common Problems of Maladjustment can be "Normal." A good deal of nervous system development occurs after birth. It is no more possible for a child to feed himself and to walk in the first year than it is for an adult to jump ten feet from a standing position. It is quite impossible to predict that one child's nervous system will mature at a specific pace. Delays in myelinization of voluntary nerves (postnatal process) will inevitably carry delay in neuro-muscular control and coordination. Speech is not smooth and clear in the beginning. The suckling process is not sloughed off at the same pace by all infants; chewing is not readily developed according to the calendar. Disorders of eating, sleeping, and elimination may arise out of a primary sluggishness in postnatal nervous system development. This is more apt to be true with the male child, who presents a greater incidence of developmental difficulties in the first eight years than the female does. It would seem to be more difficult for the boy to become a man than for the girl to become a woman. Stammering, enuresis, habit spasms, problems in academic learning, and misconduct are far more common among boys, partly because fathers expect their sons to become manly while their mothers want them to be *gentle*manly.

Character Development. The first striving of the infant is largely oral, of course. This instinctual need remains prominent throughout life, but it is the controlling force in the first phase of personality growth. The pleasures of suckling and lip activity are accompanied by a complicated series of associated movements such as nuzzling, rooting, feeling, and swallowing. These are readily recognizable in the normal breast nursing experience and can often be reconstituted by the infant who is denied enough of this kind of satisfaction. The thumb can represent the nipple, the rest of the hand may press against the face as a breast substitute, and the added "prop" of a blanket or piece of silk may bring the infant pleasures similar to the satiny feel of the maternal breast. This level of development is exclusively a taking-in process and can be characterized by the *"I want"* drive. Gratifying suckling experience is essential and can be accomplished only if the mother is accepting and loving. The symbol of this period may be the breast or the nursing bottle. Maternal success is often thought of as assured when the infant eats well and gains well. Mother is indeed proud when her baby is fat and contented.

"I Should" or "I Must"? Somewhere near the end of the first year the infant begins to show signs of readiness for "training." Nervous system development now makes certain functions at least partly voluntary. This is particularly true of the function of elimination. Bowel control is accomplished sooner than bladder control. The methods which are used by the mother or nurse can be encouraging and stimulating or they may be grim, controlling, and critical. This phase of growth offers the first circumstances in which conflict with the outer world can take root. The wise mother will help the child to grow because it *"should"* not because it *"must."* This is the first socializing influence and it can produce varying reactions of opposition or rebellion in aggressive infants, or excessive submission in others. The over-compliant infant may never show outward evidence of being able to make and follow through on his own decisions or oppose pressures. He may become a perennial weakling. The resistive infant may become rebellious, obstinate, suspicious, whether or not he

becomes "dry" to please the world. The well-adjusted infant reared by contented and permissive parents will be less likely to develop such extremes of reaction and can be expected eventually to be "reasonable" in the face of obstacles which normally occur from time to time.

By the time the still-dependent infant becomes a toddler and can do a good deal for himself in terms of personal-social habit formation, he has a right to feel proud of himself. Everybody praises him for his achievements and he feels such self-delight that he may drop his clothes and show off his perfection only to find that this is not quite approved of. Society tends to repress such joyful exhibition. This character level may properly be called "*I show*" or "*I display*." Many conflicts develop in this period, particularly in terms of rivalry, in which the growing child is pitted against siblings and now one parent and then the other. This phase is more technically referred to as the pre-Oedipal and Oedipal (complex). If the toddler is secure and well coordinated neurophysiologically he may take his first steps away from home towards school. If he runs to school and loses himself in the school program, he is likely to have been brought up well. If he walks heavy-footed, perhaps with queazy feelings in his epigastrium and longing to be back with his mother, he probably is not yet emotionally free enough of home ties and can be suspected of having had doubtful upbringing.

He is now about six years old and enters the phase of *Latency*, which lasts until he is pre-pubertal, about twelve. His physiologic immaturity is covered over with excessively masculine fantasy and acting out procedures (bows and arrows, guns, climbing, fighting, throwing). The girl, with some measure of protest, accepts femininity during this phase. She is maternally inclined in her play activity, whereas the boy has not even fantasy ideas about paternity because he is so far from adequate in the functional role which he must eventually assume. This period may well be called "*I wait*." Assuming that the boy is comfortably masculine and the girl securely feminine, adolescence can be faced with all of its turmoil. The boy is not yet experienced as a man nor the girl as a woman, yet each soon feels the strivings which prompt exaggerated demands for privileges and emancipation. In this "*readying*" phase the essential feeling of incompletion becomes more and more marked until the striving for "independence" is translated into the *interdependence* of courting and marriage. This brings the still-growing individual to the challenge of marriage. If properly brought up, the individual will be reasonably self-confident and ready to accept his own relative unimportance and the realization that only through mating can maturity be reached. Actually, full maturity cannot be reached until after the couple proves their readiness for bringing up their children for their children's rather than for their own sakes.

It is obvious that the child grows up in a family and must satisfy the emotional and love demands of all the people in the family. Everybody expects emotional returns and sometimes the child is expected to offer dividends before he gets any satisfaction himself. Many adults appear to be generous and giving in their affection when they are actually essentially enjoying coddling the infant for their sakes. A doting aunt or visiting neighbor may overwhelm the infant or young child by verbalizing a squealing delight and lifting the child up against his wishes, only to smother him in kisses and embraces. The child openly or implicitly rebels against it and gains no advantage

in the love sense, so he feels no security in the presence of such a person. In contrast, the adult who knows how to "make" love will catch the child's friendly readiness for interest and affection and will respond to the degree that the child expects. This will help him to feel wanted and secure, and in his gratitude and fulfillment, he will have a loving response ready to exchange. The role of the parent is therefore profoundly important. The wise parent must understand and modify, not just help satisfy, the child's instinctual needs. He does this through an exquisite appreciation of the child's total dependency on the parent in the beginning and the gradual movement away from dependency as inner growth strivings prompt maturation. Parents who overprotect or overcontrol are more likely to distort and delay growth of the personality. Dictatorial or indulgent methods of dealing with the child only prolong manifest or latent immaturity in the form of aggressive rebellion or passive overcompliance.

"Common Sense" May be Uncommon. No one disciplinary method can be applied as a standard to all children, for the individual defies predictability. Attempts to apply "rules" will fail if the rules are not modified to suit the given family and child. In the early years it is difficult to even explain simple truths to the growing child. Specific answers are hard to find and the parent must frankly acknowledge this. It is difficult enough to explain, let alone predict, why some families are poorly integrated and their children disturbed and disturbing. The answer can usually be found in the conflicts of the pre-school years. It is rare that a single or determining cause can be found. Many people, revealing their own character weaknesses and distortions, try too hard to follow the methods used by people who are emotionally unlike them. Parents who feel self-assured and acceptable to their friends and children will be able to accept their own limitations and live with them. The methods they use will be much less important than the basic love situations which they enjoy with each other and their children. Even the "right" method will fail if applied by the "wrong" (emotionally disturbed or inadequate) people.

Common Problems Confronting the Child's Dentist. The meaning of thumb sucking and allied oral habits has undergone great changes in recent years. Perusal of the articles on thumb sucking published by the Children's Bureau from 1914 to 1950* will convince us that we have no sustained conviction on the subject. At one time it was considered an unclean, disease-threatening habit to be stopped abruptly by whatever means. At another time it was considered to be evidence of an unacceptable form of infantile masturbation. Still later it was looked on as a symbol of parental neglect and misunderstanding of a breast-deprived child. In time it came to be thought of as a "normal" habit, to be thought of as a sign of emotional distortion only if it persisted beyond the third year. There have been those who have considered the habit altogether the result of the disappearance of breast feeding. We need only to recognize that the child who sucks his thumb must need to do so and that forcible deprivation of the pleasure represents a high emotional price the personality will pay in one or more ways, openly or implicitly, sooner or later. When the child is old enough to want help for this habit the dentist can help him recognize the meaning of it and encourage him with practical devices, but he cannot force his

* Martha Wolfenstein, Ph.D., "Trends in Infant Care." Journal of the American Orthopsychiatric Association, January 1953.

will on the child. Only if the child really *wants* to grow past this pleasure can his dentist help him. Only if the child feels his dentist accepts him and has faith in him can true success occur. The child who fights the dentist's advice and methods is doomed to failure.

The Dental Situation. The doctor must first make a reliable diagnosis. This is really quite impossible except if the child feels secure with the dentist. Empathy, which is the capacity of the doctor to sense the attitude of the patient, is not exactly the same as "sympathy," which puts the doctor in a patient's place and makes him feel distress for the patient. It is empathy which binds the doctor and the patient with an emotional fluidity which will encourage true cooperation. The overdependent child must be gradually weaned, not forced away from his fears. If the child and the doctor speak and feel a common language, a kind of emotional transference comes into being. Particularly where the child has had opportunity to visit his dentist long before pain has become part of the dental situation, the child will feel trusting and trusted. He knows the doctor will deal with him honestly and protectively and he can therefore accept the dental situation more easily. Even the insecure child who has suffered with uneasy relationships with adults long before he meets the dentist can gradually feel confidence and security in the doctor's presence. This child has so little security that he becomes panicky in the possibility that he will lose even the little that he has. He is likely to suffer more from "separation anxiety," on leaving his mother, than the child who is more mature because he is more secure at home. The doctor needs to learn how to reduce and relieve this form of anxiety, which is largely unconscious. The child should be wooed if he is to be weaned from overprotection. The sooner the doctor establishes a relationship with the child in the absence of the parent, the sooner he can count on a good emotional transference. Even the timid child can in time come to express his fears and pleasures freely. If he wants to bring a symbol of real or fantasied security such as a doll or other cherished toy, he should indeed be encouraged to do so.

Special concern for the cosmetic factor in the adolescent girl is of greater importance than for the boy. The girl's anxiety for perfect beauty is excruciatingly tense during this period and she is therefore more likely to accept treatment for malocclusion. The boy is apt to be indifferent or scoffing unless the defect will interfere with his athletic status.

The anesthesiologist has learned and so has the dentist that the best results are obtained when the child is relaxed before the application of any form of surgery. The devices or techniques which may be used to promote relaxation will fail if they are oversold. The atmosphere in the dental office must itself be essentially calm and friendly without being over-sweet. Sometimes the very reassurance that all will go well may only stir up the fear that something may indeed go wrong. The deepest influence of all stems from the essential friendliness and warmth of the doctor himself.

A word might be offered with regard to some of the methods used to relieve or suppress fear and resistance. Restraining devices will work for the timid child without reducing his fear. They will fail for the resistive, rebellious child and tend only to increase his fear. Some children are afraid they will suffocate when an anesthetic is used and they can be helped through being allowed to take part in the application and control of the mask in the first few breaths. If a towel is used to

suppress screaming, the fear of suffocation can be devastating. No doctor has a psychological right to force his will at such a lasting emotional price. Even the raising or tilting of the dental chair without prior explanation can provoke paralyzing fear and even panic. More recently the practice of hypno-anesthesia has been introduced. It offers an easy escape from fear and elicits gratitude from the patient and his family. Its use should be limited to deeply neurotic ("irrational") fears because these are so difficult to deal with by "reasoning." It does not really "teach" the child to face a bearable treatment experience and in that sense keeps him from growing up. In the severely neurotic child, moreover, one may expect that a favorable response to the unconscious hypnotic suggestion leaves the individual as suggestible as before and thus leaves an opening for transfer of his fear from one area to another. Above all, the surgeon himself must have a kind of intuitive talent for this procedure and should have had considerable supervised experience before attempting it.

Conclusions

(a) The dentist is, of course, a parent-person himself. In his dealings with the child he must by nature be given more to a protective and reassuring approach than to pressure and control.

(b) The child's dentist should have a fundamental knowledge of psychological laws of development from infancy through adolescence. This will help him to develop empathy or the ability to understand the feelings of his patient in all levels of growth.

(c) The dental situation should be comfortable for the child and the parent as well as the dentist. The emotional climate of the dental office will depend on the pedodontist's emotional maturity and disposition.

(d) The dentist need not be a psychiatrist to deal with his patients, but he will be better qualified to practice dentistry if he knows how to apply the principles of orthopsychiatry. The sooner the dentist realizes that he can do a better job in the dental setting than the psychiatrist can, the better. The psychiatrist can help to enrich the dentist's psychiatric orientation and skills, but it will remain true that the best dental psychiatry will be practiced by the dentist and not by the psychiatrist.

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Abstracts and Reviews

The Relation of Speech Defects and Malocclusion: MURRAY BERNSTEIN. (A Master's Thesis) Tufts College Dental School, Dept. of Orthodontics, Boston, Mass.

NOTE: This is a reprint of an abstract by Dr. J. A. Salzmann that appeared in the American Journal of Orthodontics, **40:** 149, Feb. 1954.

It is stated by speech authorities that malocclusion is responsible for certain defects. The information presented appears vague and not too well substantiated, and a review of the literature shows an apparent lack of scientifically based investigation. A study seemed indicated to give the orthodontist information on the relation of malocclusions and speech defects.

The study was conducted with the following objectives in mind:

1. To determine if any significant difference exists in a number of malocclusions found in a group of children with speech defects and in a similar group with normal speech.
2. To determine if there is any relation between malocclusion and speech defects and, if so,
   a. to determine if any specific type of defect is related to any specific type of malocclusion.
   b. to determine if the severity of the speech defect is related to the severity of the malocclusion.

The Lynn Public School System of Lynn, Mass., was selected for obtaining the material used in this study. In this school system all the children are examined and tested for speech defects by competent speech therapists.

The criteria for malocclusion were based on Angle's classifications. A separate group consisting of open bite was included.

The experimental group of 437 speech defect children was examined for malocclusion. A control group of 446 children with normal speech was also examined for malocclusion.

After the initial examination it was possible to divide the experimental group into two; one group of children with speech defects and no malocclusion, and one group with speech defects and malocclusion. The latter group was further investigated by means of oriented lateral head x-rays in the Margolis Cephalostat and by speech recordings.

The data were subjected to statistical analysis and the following conclusions were drawn:

1. Children with speech defects do not have a greater amount of malocclusion than children without speech defects.

2. Speech defects are not related to malocclusion generally except in the classification of open bite.

3. In the classification of open bite there is a strong relationship to lisping.

4. In open bite, the severity of the lisp does not vary with the amount the bite is open or with the amount of overjet, or overbite. More data are necessary for a more definite conclusion.

HUGH M. KOPEL, D.D.S., M.S.

Editor's note: It is suggested that the results of this research be compared to the ideas on the relationship of dentistry to speech of Dr. Howard E. Kessler, a Dentofacial speech consultant for the Cleveland, Ohio School System. Dr. Kessler's work appears in the Am. Dent. A. J., 48: 44–9 Jan. 1954.

Copper Amalgam in Children's Dentistry: BRUCE LINDSAY. Dent. J. Austral. **25:** 21–5, Jan.–Feb. 1953.

In advocating the use of copper amalgam, it is necessary to go against conservative dental opinion as expressed by Scharfenberg who maintains that this material does not belong to children's dentistry, but it is this author's thought that there are sufficiently good reasons for its use.

Worthwhile references in the literature to copper amalgam, particularly any concerning its physical properties are difficult to find. The disadvantages of copper amalgam are cited thusly:

1. Slowness of setting, which appears to be its only real clinical disadvantage.
2. Its slow solubility in the mouth, but this varies with the consistency at which it is packed.
3. It is claimed that a mesial restoration in a first primary molar will damage the first permanent canine if the latter erupts before the loss of the molar because copper amalgam provides a poor contact. However adverse results seldom occur in actual practice.
4. Poor color.

The advantages of copper amalgam are more numerous.

1. More easily tolerated by the pulp than any other permanent filling material.
2. Being a reversible amalgam, it is economical with minimum wastage.
3. Its bacteriostatic effect.
4. Its slow solubility helps prevent recurrent caries as marginal deficiencies are filled with black copper oxide.
5. Its hardness when set is of a consistency similar to silver amalgam.
6. It exhibits no flow whatever compared to silver amalgam, which may have a permissible flow of up to 4 percent.

A proper cavity preparation and a well fitting matrix are just as important with copper amalgam as with any other restorative material. The amalgam pellet should be heated at the lowest possible temperature for the shortest time to produce sweating. In this way contraction is held to a minimum.

The fact that copper amalgam can be placed nearer the pulp than any other permanent filling material without causing pulpal death, is in the author's opinion, its greatest advantage. This conflicts with a fundamental idea that metallic filling must be lined for lessening thermal conductivity.

It is pointed out that the expansion of silver amalgam will often cause more discomfort than will pain brought on by thermal conductivity. Excessive expansion occurs when amalgamation takes place in the presence of moisture, which can be introduced in many ways. Nonzinc alloys do not expand. Hence is the big difference between silver and copper amalgam as far as the effects on the pulp are concerned. Copper amalgam has a small ultimate contraction, whereas silver amalgam has a large ultimate expansion unless a very exact technic is used during mixing and insertion to exclude all moisture. The large expansion irritates the pulp and produces sudden pain and reactions to temperature changes.

It is shown from inference, that in thermal conductivity alone, copper amalgam is 50% better than silver amalgam, so that this cannot be considered an explanation of why there is a lack of pain under copper amalgam as a result of thermal shock. If this reasoning is correct, the author thinks that it should be possible to place unlined silver amalgam fillings in

teeth using a moisture excluding technic. One hundred and five such fillings were placed and two case histories are discussed.

There is a five point summary and eleven references at the end of this discussion.

HUGH M. KOPEL, D.D.S., M.S.

Editor's note: The same issue of this Dent. J. Austral. carries an excellent paper on "Some Aspects of Pedodontics Relative to Orthodontics by Alan S. Burgess. It is recommended reading for the pedodontist and the general practitioner who would reduce the incidence of malocclusion by preventive measures in dealing with irregularities of developmental processes.

Penicillin reactions: their nature, growing importance, management and prevention: KERN, R. A. AND WIMBERLEY, N. A., JR. Am. J. Med. Sci., **226:** 357–75, Oct. 1953.

The advent of penicillin, in 1943, was hailed not only because of its remarkable therapeutic powers, but also because of the infrequent and trifling reactions that followed its use. Today, it heads the list of medical agents in the frequency, diversity, and severity of the sensitivities it induces. It has replaced foreign sera as the most common cause of fatal anaphylactic shock and is responsible for an increasing number of deaths from periarteritis nodosa. In many instances the sensitivity has been incurred unnecessarily. Moreover, the most severe sensitivities can be recognized by skin tests (a rarity in the field of drug allergy).

The striking fact with regard to penicillin reactions is the multiplicity of forms in which they may occur. There are six forms of dermatitis, "serum sickness" reaction, purpuric reactions, agranulocytosis, photosensitivity, lupus erythematosus, periarteritis nodosa and anaphylaxis.

The factors favoring penicillin sensitization are: a sensitizing exposure, an allergic constitution, the penicillin preparation and route of administration, and cross reactions with other fungi.

The management of anaphylactic shock is discussed in detail with particular emphasis placed upon the necessity of being prepared for such an emergency by having the proper drugs and resuscitation equipment ready for use at all times. This includes a tourniquet, sterile syringes, epinephrine, benadryl, pyrabenzamine, and oxygen.

Much penicillin sensitivity is unnecessary and preventable by not giving penicillin for minor ailments, *avoiding local applications of the drug*, avoiding preparations of depot penicillin, giving preference to the oral route of administration, and avoiding combined parenteral injections with other possible antigens. Penicillin reactions may be largely avoided by careful attention to an allergic history in the patient's background by questioning about previous penicillin reactions, and by proper management of such patients.

WILLIAM F. VIA, JR.

Some Considerations Prior to Experimental Fluoridation: CARR, L. M. Dent. J. Australia, **25:** 208–11, Sept.–Oct., 1953.

Several interesting problems, based upon American and other research, that are faced by a community planning to fluoridate its water supply are described in this article.

1. What level of fluoridation should be adopted? It is pointed out that 1.0 parts per million of fluoride in the drinking water is optimum to produce caries reduction without dental fluorosis in temperate climates only. In countries with a cooler climate, such as Norway, 2.5 p.p.m. causes no fluorosis, while in the Punjab

where the intake is increased, 0.6 p.p.m. is associated with severe dental and skeletal fluorosis.* The question arises then of whether it would not be necessary to vary the fluoride content of the water to compensate for the seasonal variation of water intake in addition to giving consideration to the volume of water consumed in a particular climatic zone. The optimum daily intake of fluoride for children up to eight years is 0.05 milligrams per kilogram of body weight.

2. The existing fluoride content of the water must be determined. In addition, the fluoride content of foods should be considered. The simplest measure to determine the fluoride intake is by urinalysis, since fluoride excretion in the urine reflects the quantity consumed.

3. Determination of the caries rate of the population in question. The D.M.F. surface index, using x-rays and a correlation between examiners is the method of choice. Comparing the caries rate of a community using fluoridated water with a similar community that has no fluoride in the water supply is one method of determining caries reduction. Another method is by comparing pre-fluoride caries rates with post-fluoride caries rates in the same community.

4. A survey to determine the prefluoride prevalence of mottled enamel should be made. This is done to insure accuracy in determination of mottled enamel which occurs after the addition of fluoride to the water supply.

5. The community must be educated to fluoridation. Some factors requiring emphasis are:

a. Fluoride does not prevent all caries, so other preventive measures should be continued;
b. Children and future adult generations will benefit;
c. Caries inhibition does not take place immediately;
d. There is no detectable change in the water, no toxic effects, and no effect upon industrial processes.

WILLIAM F. VIA, JR., D.D.S., M.S.

The Unerupted Cuspid: Cooperation Between Orthodontist and Oral Surgeon: HILMORE, F. E., AND NORTON, R. Y. Dent. J. Australia, **25:** 200–8.

When a patient exhibits delayed eruption of the maxillary canine, the following factors should be considered: the noneruption may have been caused by supernumerary teeth, dense bone or fibrous tissue in the path of eruption or overretention of the primary cuspid.* It is imperative to determine the exact position of the tooth by radiographs and by observing the tilting of the adjacent teeth and bulging of the mucosa.

The treatment of unerupted cuspids can be accomplished by the surgical removal of the tooth, simple excision of the overlying tissue, raising a flap, removing some overlying bone and "wiggling" the tooth to stimulate eruption or by movement of the tooth to its normal position orthodontically following surgical exposure of the crown. The latter method is the most successful and is described stepwise as follows:

1. A mucoperiosteal flap is elevated from second bicuspid to midline and halfway to the middle of the palate. Care must be used to avoid injury to nasopalatine vessels and nerves and the anterior palatine artery and vein.

2. Bone is removed with sharp hand

* Ed. Note: However, it has been shown that in some areas of India severe osteomalacia and post-natal enamel hypoplasia result from the low calcium intake and could be confused with dental and skeletal fluorosis.

* Ed. Note: Hereditary factors may be considered also.

chisels to form a channel to the crown, then the coronal sac is curretted away and the crown exposed.

3. A window is cut in the flap.

4. The flap is sutured into position, and a zinc oxide-eugenol and cotton pack is placed over the crown and held in place by a suture through two convenient sides of the flap.

5. The patient is extended routine post-operative care, and the pack is removed in six or seven days.

The patient is referred back to the orthodontist for movement of the tooth, through the channel established by the operation, into normal occlusion.

Several case reports and photographs graphically illustrate the technique and results.

WILLIAM F. VIA, JR., D.D.S., M.S.

The following dentists passed the American Board of Pedodontics examination held at Chapel Hill, N. C., June 14–16, 1954 and were certified June 16, 1954:

Melvin A. Noonan, Birmingham, Michigan
Hugh Michaelson Kopel, Detroit, Michigan
Theodore Suher, Portland, Oregon
Edwin Frank Froelich, Santa Barbara, California
John Edmund Gilster, St. Louis, Missouri
Cyril Thomas Havey, Los Angeles, California
Roland Renard Hawes, Rochester, New York
Frederic Roland Shiere, Boston, Massachusetts
Joseph F. Burket, Chapel Hill, North Carolina

Ralph L. Ireland, Secretary
American Board of Pedodontics

How to Help Your Child to Be a Good Dental Patient: An Open Letter to Parents.

C. F. Tuma, D.D.S.

Foreword to the Dentist

MANY parents are not aware of the importance of the primary teeth. Many more, while recognizing the value of sound primary teeth to the whole child, are apprehensive and confused about the first dental appointment. As a result of uncertainty and procrastination, the ideal time may pass, until pulpal involvement may make the initial dental experience so unpleasant that a lifetime dental phobia ensues.

Mother, upon whom the duty generally and rightfully falls, would gratefully welcome a simple directive for its solution. While there is no simple rule which is "right" for all cases, there are many principles which, if applied with sincere affection, and with respect for the capacities and rights of the child, may make it possible for him to accept the necessary dental procedures without psychological trauma of consequence.

The "Letter" which follows is intended to be a simple guide for the bewildered parent, to provide him with an elementary understanding of the importance of the teeth and the need for their care. It outlines a positive plan for carrying on with peace of mind for the parent and with adequate care and kindness for the child. It is therefore couched in terms which are commonly used and understood by parents.

It has been said that there are no bad children. Some are just worse than others —badly conditioned, that is. If the "Letter" is instrumental in helping only one child to a more mature attitude toward dentistry and to the unavoidably related whole pattern of his life, then it will have repaid the many from whom the thoughts expressed here have been borrowed. The most helpful suggestions and criticisms of Dr. Oscar B. Markey, Cleveland Child Psychiatrist, are especially appreciated.

The Letter

Dear Parents,

It is difficult for most parents to approach this problem with an objective and unemotional attitude, for most adults have had unpleasant dental experiences during their own impressionable childhood years. These have colored their emotions and have conditioned them to look upon all dental experiences which follow as unpleasant, or terrifying and painful. Such was the dentistry of the preanesthetic era, when "Pull them out when they hurt" was the rule. It is most difficult to avoid transferring such an attitude to one's children, for children are quick to sense their parents' feelings, oft-times from the mere tone of voice.

Today, such fears are archaic and unreasonable for dentistry is now very different from that of yesterday. To begin, most dental decay is preventable if intelligent dietary practices are faithfully observed. These must include rigid restriction of excessive sugars. This is vitally important for young children and teenagers. When dental decay runs rampant, almost invariably the individual has been indulging in frequently repeated sweets. If sugar-bearing foods, chewing gum or

confections are taken into the mouth, they should be washed off the teeth *immediately* after, when this is practicable. The teeth should be kept free of sugar and other food debris at all times.

Fluoridation of drinking water results in more than fifty percent average reduction of dental decay in those individuals drinking properly treated water during the entire first ten or more years of childhood. The dental profession at large endorses and encourages the use of *all* these methods of prevention for they have proved themselves safe and effective.

The wise parent will co-operate in this program of prevention by providing an adequate diet and by drastically restricting sweets and chewing-gum to *infrequent* occasions. He will encourage thorough mouth cleanliness, and brushing of the teeth *immediately* after the partaking of sweets. He will wisely co-operate in developing Community Fluoridation Programs.

However, no preventive program can be one hundred percent effective, and professional skills should supplement the home care of the teeth. Early and systematic examinations, using modern diagnostic aids, notably x-ray pictures when indicated, can veritably insure one against serious dental troubles and early loss of teeth. Those cavities which do occur are, in this manner, found before serious complications develop, and shallow and inexpensive fillings can be placed with little discomfort. When, through continued neglect, decay may have progressed excessively, treatment is at once more costly and painful unless an anesthetic is used. Even apprehension may be allayed with sedatives, when unusual fear exists.

But why, you may ask, go to this trouble and expense when the baby teeth will soon be shed and be replaced with permanent successors? However, a child's teeth are more important to him than your teeth are to you! His active growth demands teeth which are comfortable and efficient for mastication. Children often become "poor eaters" when open cavities or abscessed teeth make eating painful. The common "gum-boil" is the drainage site for the pus which forms when the pulp or so called "nerve" has died. Such infection may lead to serious systemic health complications, like acute rheumatic fever with probable heart involvement. The so called "growing pains" of childhood are not "growing pains" at all, for normal growth is never painful. These pains may be early symptoms of rheumatic conditions. So you see, the care of the baby teeth is not unimportant after all.

Nor are the baby teeth soon lost. Only four upper and four lower front teeth are shed at about seven years of age. The remaining cuspids and baby molars are not normally shed until about ten or twelve years of age. During these years they should serve the combined purposes of mastication, stimulation of normal jaw development and the maintenance of the space for the regular eruption of permanent successors. When the baby molars are lost prematurely, not only is the masticating efficiency temporarily impaired but the eruption of the permanent teeth may be so disturbed that permanent impairment and facial deformities may result. This may call for correction by orthodontic means (braces), an avoidable extra expense.

The first permanent molars generally appear at about six years of age and directly behind the last of the baby molars. These are most important teeth and since they often erupt uneventfully, and since no baby teeth are lost to make room for them, parents often mistake them for baby teeth and neglect them, erroneously

expecting then to be lost at an early date. About a year after the sixth year molars have appeared the permanent incisors (front teeth) are appearing. Thus, from six to twelve there is a mixed dentition of baby and permanent teeth. The permanent teeth designed for a lifetime of service may be carelessly lost during early childhood.

Fortunately, the baby teeth are not very sensitive when tooth decay is at an early stage and your child's dentist can concern himself chiefly with a sympathetic understanding and a respect for your child's personality and his capacities. With your co-operation, he can maintain your child's teeth in a comfortable, healthy and efficient condition, at a minimum cost.

In keeping with the general principles discussed, the following specific rules have been developed for the guidance of parents of young children.

1. *Never discuss your own or others' dental experiences in the presence of a young child*, whether you think he is listening or not.

2. *There should really be no first dental appointment.* Rather let your child accompany you a couple of times when you are to have your own teeth examined, so that he may, in his own due time and following your example, get acquainted with the office and its routine, and with the dentist and his assistant. In that way he is not frightened by being placed abruptly in a strange chair surrounded by more strange equipment and people. For example, most everyone has seen timid children frightened or hysterical upon being placed abruptly in a strange barber chair, where we know that pain is not the cause of the fear.

3. *Your child's teeth should be examined carefully by age two and a half years*, for small cavities frequently occur by this time.

4. *Early morning appointments are preferred*, for then your child is well rested. Later in the day he may be tired and irritable.

5. *Do not, at great length, prepare your child for the appointment* at which his teeth are to be examined, lest your great concern create suspicion and apprehension in his mind. Instead, just before the appointment and in a cheerful and casual manner, simply state that you two are going shopping, later the dentist is going to look at his pretty teeth and perhaps clean them, and then you are going to visit "Aunt Mary."

6. *Do not promise a reward if he is good*, for this suggests to him that you rather expect him to misbehave. Let him bring a favorite doll or toy from home to hold beside him in the dental chair. This gives him the feeling that he is not alone, but rather that he has an old friend with him. If you wish to buy him a toy or some article of clothing, do so *before* the appointment as a token of your affection, but *never as a reward.* Like blackmail, buying protection with promised rewards can become unreasonable without end. If worse behavior brings greater rewards, you may encourage your child to create a worse situation. This pattern can easily become established habit and very difficult to correct.

7. *If the dentist invites you into the inner office with your child*, lead him cheerfully to the dental chair, help him up, then go to the rear or left of the chair where you will not be in the dentist's or his assistant's way. Allow them to take over. Your child is strengthened by your guidance and your cheerful, assured mannerism. If you have promised that something specific would or would not be done, be sure that you so inform the dentist at this

time. All such promises should be kept. Please *do not* continue to give instructions nor repeat the dentist's instructions to your child, for this is confusing.

8. *Remain cheerfully and casually in the background.* If there is a display of tears or emotions, a reassuring word from you is in order. Try not to respond too willingly to bids for babying, for excessive sympathy at this time will be taken as an invitation for further emotional outbursts. A child who feels insecure in his parent's affections may resort to any means, including deliberate screaming and tantrums if need be, to gain attentions. For this reason a child should be coolly and unemotionally considered when he misbehaves; praise and attention should be generous when he is good. Be sure your praise is heartfelt, and not insincere and overdone flattery.

9. *When the appointment is completed, a cheerful and reassuring expression of approval is in order* even if your child's behavior has been somewhat short of your expectations. Try to remember that he has done his best within his abilities in the face of a trying situation, and with your encouragement and moral support he will try to be more "grown up" next time. Do not belittle or call him a baby. Children want to be "grown up."

10. *Please curb your motherly protective instinct to baby him if he again makes a demonstrative bid for sympathy,* for this only encourages further emotional display. Try to take no notice of his behavior, but with a reassuring smile and a pat, go about the business of dressing for the trip home via Aunt Mary's, the while arranging for the next appointment in a matter-of-fact manner. Keeping yourself and your child occupied during these tense moments provides a relaxing transition to the further schedule of the day.

Lest you should feel that some of the aforementioned suggestions are cold and lacking in sympathy for your child, let us hasten to make clear that love and understanding are of first importance if you are to successfully guide him along the path where he learns to face and to overcome the obstacles in his way. The dental problem is only one of many such obstacles which must be met and conquered. each in its turn and from the very first years.

The habit patterns of one's conduct throughout life are largely established and fixed by the age of six years. If your child is repeatedly permitted to meet obstacles with emotional outbursts or with tantrums which never solve problems but only postpone them or transfer them to mother, then your child may continue to find life's problems frustrating. He may never be able to make his own decisions or to cut himself loose from "mother's apron strings." No mother really wishes for that.

Children return love for love freely given; they develop respect for those who respect them; they welcome firm and consistent guidance in the job of learning to always do what is best for all concerned; they accept adversity when they are told in language they can understand what the situation is and why a certain course must be followed.

It is our hope that we can work together harmoniously in helping your child to be a good dental patient, and ultimately a self-reliant, emotionally mature and healthy adult.

Sincerely,
Your Child's Dentist

13201 Miles Avenue
Cleveland 5, Ohio

Around the Country

This guy *Hugh Keenan*, our president, must have a bicycle! Heading the American Society of Dentistry for Children is only one of his many activities. He's a member of the Board of Education in his town, Corning, New York—and served as publicity director last fall when there was a drive for a $1,500,000 bond issue for the erection of two new elementary schools. The issue passed 3 to 1—testimony of the good job *Hugh* turned in. He's a member of his Rotary's Youth Committee. He was in charge of dental health activities in his home county during Children's Dental Health Week. On February 17, he appeared on a television panel with a district health officer and two mothers in a program explaining and recommending fluoridation of the public water supply of Corning. He has represented his society in talks on topical and communal fluoridation.

Hugh presented a table clinic, "X-ray Procedures in Pedodontics" at the Mid-year meeting of the New York Unit—and another table clinic, "Pointers for Parents" at the May 10th scientific program of the New York Unit in conjunction with the Dental Society of the State of New York.

He is treasurer of the Skyline Inn in Mount Pocono, Pennsylvania, administers the large building in Corning, half of which he owns and in which he practices. And still he practices dentistry and stays on good terms with his wonderful wife and children!! We can be proud of President Hugh Keenan.

* * *

Otto W. Brandhorst of St. Louis, immediate past president of the A.D.A., has been appointed to a new task force on medical services under the Hoover Commission on Government Reorganization.

* * *

Walter C. McBride spoke at the annual Cincinnati March clinic meeting. His subject: "The Care of Children in Your Practice." *W. Phillip Phair*, secretary of the Council on Dental Health of the A.D.A., presented "The New Look in Dental Health" at the same meeting. *William Koester, Jr., Ruth W. Mayer*, and *Virgil Sides* gave table clinics on Dentistry for Children.

* * *

Ruth Martin, St. Louis, was essayist at the April 12 meeting of the Cincinnati Dental Society.

* * *

J. L. Hughes of Albertville, Alabama, gave a clinic on Dentistry for Children before the Columbus, Georgia, Dental Society recently.

* * *

Charles Yates and *B. G. Douglas*, of Dallas, gave a table clinic at the Mid-Winter Clinic meeting of the Dallas County Dental Society January 24–27. The title, "Full Mouth Reconstruction on the Child and the Adolescent". *Albert Horton*, chairman of the department of children's dentistry at Baylor also presented a clinic.

* * *

John Gilster, St. Louis, spoke on Dentistry for Children before the Northeast

District of the Arkansas Dental Society on February 17. He also presented programs for the March meetings of the St. Louis Society of Dental Science and the East St. Louis (Illinois) Dental Society.

Maury Massler, Chicago, was essayist at the Illinois State Meeting in Springfield in May. Maury also appeared on the program of the Southern California State Dental Association meeting in May. Among those who were on the program of the Chicago mid-winter meeting were *Tom Barber*, Oak Park, *Elsie Gerlach*, Chicago, *Bill Humphrey*, Denver, *Ralph Ireland*, Lincoln, Nebraska, *Anthony Malone*, River Forest, Illinois, *Ralph McDonald*, Indianapolis, *Walter McFall*, Asheville, N. Carolina, *Bill Brandhorst*, St. Louis, *Dorothy Rizzo*, *David Torch*, *Asher Sherow* and *Philip Suess*, all of Chicago.

* * *

Arlo Dunn, Omaha, was recently honored at a Omaha District Dental Society dinner for his work in scouting. He has served as scoutmaster for thirty-one years and received the highest award for scouting service, the Silver Beaver.

* * *

Our former prexy, *Earl Lampshire*, spoke on "Practical Aids to More, Better and Easier Dentistry for Children" at the Greater Philadelphia Annual Meeting, February 3.

* * *

Henry Wilbur, Louisville, gave a limited attendance clinic at the Michigan State Dental Meeting, April 27 in Detroit.

* * *

Benjamin Kletzky presented "Pedodontics is Everybody's Business" at the Texas State Dental Meeting in Dallas on April 28.

* * *

Victor Garfinkle is president this year of the Alameda (California) District Dental Society. *Irwin Beechen* is vice-president and is serving as chairman of its membership committee.

* * *

Bernard A. Smith, Jr. is co-vice-chairman on the committee on Dental Health and Education of the Alameda County District Dental Society.

* * *

Those on the program for the Pedodontic session at the meeting of the American Association of Dental Schools at French Lick, Indiana, in March were *Ralph McDonald*, *Paul Losch*, *George Teuscher*, *Manuel Album*, *M. M. Cohen*, *Cosmo Castaldi*, *Henry Wilbur*.

* * *

Others of our A.S.D.C.'ers seen at the meeting were *John Brauer* and *John Burket*, Chapel Hill, *Joseph Volker*, Birmingham, *Bill Brown*, Ann Arbor, *Norman Olsen*, Kansas City, *Harold Addelston*, New York, *Lyle Pettit*, Columbus, Ohio, and yours truly, *Jack Gilster*, St. Louis.

* * *

The Children's Dental Health Day Committee of the Cleveland Dental Society set February 1 as Seminar Day. The entire day was devoted to programs dealing with health and welfare of children. *Ralph McDonald* gave "Management of Common Pedodontic Problems" in the morning. *Mrs. Grace Bok Holmes* spoke on "The World's Children" explaining what the United Nations is doing for children around the world. *G. Thaddeus Gregory* spoke on "Oral Surgery Problems in Children" and *J. William Adams* discussed "Interception of Orthodontic Problems in Dentistry for Children" in the afternoon. A newspaper type program, *The Pree-Lim*, circulated well ahead of the meeting, heralded the subjects, speakers and activities in a newsy interesting style.

Many of our societies would do well to copy this idea and type of meeting!

New Offices—New Locations

Joe G. Sweet II with *Charles Sweet, Sr.* as consultant, has just opened a handsome new office at 447 29th Street in Oakland, California—for the practice of oral roentgenology and diagnosis.

* * *

In a chatty letter from *Harold Rosenbaum*, we learned that he is now practic ng Dentistry for Children at 2503 N. 45th Street in Seattle, Washington. *Harold* graduated from McGill University in 1946, spent two years at Guggenheim in New York, then in private practice in New Rochelle. He was a member of the New York unit. After a "hitch" in the U.S.A.F., he has discovered the Great Northwest—and is now one of its enthusiastic boosters—Good luck to you, *Harold*!

* * *

And a letter from *Gertrude Tank* tells us she, too, has "gone West". After serving the Pennsylvania unit well and in many capacities while in Philadelphia, she has moved to Oregon. Now Professor of Nutrition Research at Oregon State College, she is living in Corvallis, Oregon.

* * *

Earl Shepard and *Leo Lundergan*, St. Louis orthodontists, have moved their offices to a beautiful new building at 8230 Forsythe Boulevard.

* * *

Diaper Derby

The *James Huerter's*, Omaha, Nebraska, have a son, Timothy, born in January.

The *Keith Abbotts*, Columbus, Nebraska, have a son, Stephen Mark, born October 16, 1953.

The *Norman Olsens* have a new baby, born March 1.

Announcements—Graduate and Post-Graduate Education

The University of Alabama School of Dentistry in conjunction with the United States Children's Bureau and the Alabama State Department of Health ponsored one-week refresher coursses in Dentistry for Children in February and June. These courses were given tuition-free to Alabama dentists. Dr. *Sidney B. Finn* directed the courses.

* * *

In April, 1954, the Dental Program of the Extension division of the University of California at Los Angeles announced an eight week refresher course in dentistry. This course includes lectures in fifteen subjects and clinical and laboratory procedures involved in Operative Dentistry, Crown and Bridge, and Prosthetics. For further details write to J. Eugene Ziegler D.D.S., Head Dental Extension, 815 South Hill Street, Room 211, Los Angeles 14, California.

* * *

A postgraduate course in Dentistry for Children is to be presented June 21–29 at the College of Physicians and Surgeons. *Maury Massler* and staff will conduct the course.

* * *

Two fellowships have been established by the Dental Guidance Council for Cerebral Palsy and sponsored by the United Cerebral Palsy of New York City, Inc., to train dentists in special medico-dental problems in the treatment of children with cerebral palsy. Each fellowship carries a stipened of $3000 to $3600. The Cerebral Palsy Fellowship is a two year full-time program and includes applied basic science courses and medical and dental courses in various aspects of pedodontics and cerebral palsy. During the second year there is emphasis on complete in-patient and out-patient cere-

bral palsy dental service. For further information write to Postgraduate Division, School of Dental and Oral Surgery, Columbia University, 630 West 168th Street, New York 32, New York.

* * *

A meeting of the American Board of Pedodontics was held at the School of Dentistry, University of North Carolina, Chapel Hill, North Carolina, June 14–17, 1954.

* * *

The University of North Carolina, School of Dentistry, announces its graduate program in Orthodontics, Oral Surgery, and Pedodontics, leading to a Master's Degree or a certificate. The graduate programs in Orthodontics and Pedodontics require 15 months in residence, while 24 months are required in Oral Surgery. The curriculum is planned to meet the educational and experimental requirements for the respective specialty boards. Students are admitted in Orthodontics and Pedodontics in June each year, while admission for the study of Oral Surgery is scheduled for September. For further information please write the Dean, School of Dentistry, University of North Carolina, Chapel Hill, North Carolina.

* * *

The Seventh Annual Dental Health Conference, sponsored jointly by the School of Dentistry, University of Pittsburgh and the Odontological Society of Western Pennsylvania, was held in Pittsburgh's Mellon Institute on April 28, 1954. There was a double theme for the Conference this year: "Dental Care for the Child" and "The Psychiatrist Looks at Dentistry." The program consisted of two speakers followed by a panel discussion with one topic at the morning session and the other in the afternoon.

Dental care for children from the viewpoint of the pediatrician was discussed by *Warren R. Sisson*, M.D., Forsythe Dental Clinic, at this conference. *John C. Brauer*, D.D.S., University of North Carolina, considered the subject as viewed by the Pedodontist. The panel consisted of the two essayists and two Pittsburgh pediatricians and pedodontists.

Benjamin Spock, M.D., University of Pittsburgh, discussed psychiatry and dentistry for children. *Frederick L. Weniger*, M.D., University of Pittsburgh, was the psychiatrist who looked at dentistry for the adult. The panel was composed of the two speakers plus two Pittsburgh psychiatrists and dentists.

The Conferences, begun in 1948, have considered such subjects as prevention and control of dental caries, extension of dental care, fluoridation of community waters, periodontal disease, oral pathology, focal infection, oral manifestations of systemic disease, and advances in the etiology of dental caries. Last year, sugar and dental caries was the main topic.

* * *

A group of Honolulu dentists, having received a charter to form a Territorial Unit of the American Society of Dentistry for Children, met at the Strong-Carter Dental Clinic, Honolulu, on December 18, 1953 and formally organized the Hawaii Society of Dentistry for Children. The Society embraces all the Islands.

Dr. Albert Lemes, of Honolulu will head the Society until the first annual meeting next June. Other officers elected are: *Dr. S. W. Gynn*, vice-president and *Dr. John H. Dawe*, secretary-treasurer, both of Honolulu.

Dr. Paul Schiff, of Inglewood, California, who spent the Christmas holidays vacationing in Honolulu with his wife and parents, was the first speaker to address the Society. His lecture, which featured "Child Management" but in-

cluded other practical hints for pedodontists was well received. The meeting was held on December 30, 1953.

* * *

Dr. Mabel Fontane Wood, Director of Dental activities for Orleans parish schools, has been appointed a fellow of the American Public Health association.

Dr. Wood received the honor "in recognition of professional standing in the field of public health," according to her certificate of appointment.

A native of Moreauville, *Dr. Wood* has practiced dentistry in New Orleans for the past 32 years. She is a past president of the National Association of Women Dentists and is a member of the American Society of Dentistry for Children. She received her DDS degree from Tulane University and a BA degree from Louisiana State University. She is senior member on the dental staff of Touro Infirmary.

* * *

The University of North Carolina School of Dentistry announces a series of Postgraduate dental courses to be offered at the Dental School in Chapel Hill this summer. The courses with inclusive dates are as follows.:

Dentistry for Children I—July 12–16

Dentistry for Children II—July 19–23

Dentists interested in receiving additional information are requested to write to the Department of Postgraduate Dental Instruction, P.O. Box 750, School of Dentistry, University of North Carolina, Chapel Hill, North Carolina.

* * *

We congratulate *Dr. Sylvia E. Zappler* upon her recent election as President of the Association of Women Dentists of New York.

* * *

A department of Preventive Orthodontics has been established at the College of Physicians and Surgeons under the direction of *Dr. Fred West.* This department will present to the undergraduate students clinical training in preventive orthodontics including the diagnosis and treatment of individual patients. The course will tie in with the undergraduate pedodontic course to give the student a well-rounded background and clinical training in the care of children. The clinical work is directed by orthodontists including several members of the A.S.D.C.

* * *

Dr. Fran Summers, head of pedodontic department at U.S.C., and *Dr. Don Laston*, instructor in pedodontics at P and S., are flying back to Ann Arbor, Michigan in May to attend a course in pedodontics to be given by *Dr. Ken Easlick* at the University of Michigan.

* * *

Several members of the Northern California unit including *Drs. Danford, DeMeo, Laston, McKinnon, Mandler, Seims, Sweet, Strangman,* and *Sowden* journeyed to the south to attend the pedodontic meeting at Arrowhead Springs Resort at which *Dr. John Brauer* and *Dr. Ralph Ireland* were headliners.

* * *

On March 16, *Dr. Charles Scrivener*, Associate Dean of P. and S. spoke before the pedodontic group at Children's Hospital of Oakland, California. His subject was "Bacterial Antagonism, a Factor in Dental Caries Prevention". This was a review of the dental caries research being conducted at the College of P. and S. by *Dr. Scrivener.*

Morphologic Considerations of Primary Teeth in Diagnosing Radiographs

JOHN F. MORTELL, D.D.S.*

Editor's note:

John Mortell is a graduate of U. of Iowa School of Dentistry—1942. After a 3 year hitch in the Navy, he practiced until 1953 in Oshkosh, Wisconsin, associated with his father and brother. He expects to receive his M.S. in Pedodontics from the University of Michigan in June, 1955, then to return to Oshkosh, b'gosh!

About the time this Journal appears in the mails, John will be walking the floor with his third child which his wife is hoping will be as handsome as his pappy!

This paper presents the anatomical and developmental knowledge which a sharp diagnostician must keep in mind to critically appraise radiographs of the primary dentition.

A. E. S.

RADIOGRAPHS of the primary teeth have many diagnostic uses. Awareness of the dentist's responsibility for determining the dental needs of the child requires that every finding recorded in the radiograph be discovered, interpreted, and evaluated properly.

Since an accurate knowledge of that which can be accepted as normal for a growing child is an important criterion of radiographic interpretation, a study of the literature was undertaken to assemble critically selected data on the morphology of the primary teeth during their lifespan. Wherever possible, the radiographic manifestations have been indicated.

The first radiographic sign of the future primary tooth is the appearance of an almost circular radiolucent structure in the bone. This radiolucent structure has been designated as the crypt of the developing germ of the tooth. This radiolucent germ of the tooth is enclosed within the crypt, which is only bony in part at this stage, a three month fetus. Prior to this stage important cellular changes have taken place—initiation through apposition.

Then there appears a small radiopaque triangular area close to the inner coronal border of the crypt indicating evidence of beginning calcification or maturation of the crown. This opaque area usually can be seen radiographically in the germs of the primary central incisors of the six month fetus.[2] Maturation will be noted radiographically two to six months later than it can be demonstrated histologically. The quantitative increase in calcification easily is determined by securing periodic radiographs. It has been concluded that the process observed radiographically in serial radiographs is maturation—a process of forming crystals of inorganic apatite from the organic calcium salts already present in the matrix of the enamel. Few developmental differences will be noted between right and left teeth of the same kind, and the general type of growth by each tooth is approximately the same.[33]

* Graduate Student in Dentistry for Children, W. K. Kellogg Foundation Institute: Graduate and Postgraduate Dentistry, University of Michigan.

At birth the mandible is somewhat like a thin shell of growing bone, the body of which seems almost entirely composed of the crypts of the developing teeth. The bone consists of exceedingly thin plates which surround the individual germs. There is no bone as yet at the incisal or occlusal crests covering the germs. The maximum space for the crowns of first and second primary molars is already attained, although the crowns of these teeth are far from completed at birth. By nine months bone is present all along the crests covering the incisal and occlusal surfaces of all of the developing germs of the primary teeth.[3]

The bony crypt which surrounds the entire tooth, prior to eruption, remains to envelop the root of the tooth and becomes the lamina dura.[33] There is convincing evidence that the developing germ does not migrate from its original site during its development; instead it develops in a fixed site increasing its size eccentrically in all directions according to its pattern.[18, 36] Apically it comes to lie deeper in the basalbone (maxillary or mandibular) by the appositional growth at the ridge, since there is no alveolar process until the teeth erupt.[8] As the germ of the primary tooth develops, the bone of the jaw grows incisally and occlusally, encapsulates the tooth germ and finally forms a complete bony crypt. It must be recognized that the bone of the jaw has its independent pattern of growth which is in no way dependent upon the pattern of growth and development of the teeth.[19] Eruption of the primary central incisors generally begins before growth of the jaws has progressed sufficiently to encapsulate them completely. Normally all other teeth are fully encapsulated prior to eruption.

Movements of eruption begin at the time of beginning formation of the root. At this period the germ is surrounded by the radiolucent loose connective tissue of the dental sac, and in most instances by the dense radiopaque bone of the tooth crypt.

The prefunctional stage of eruption begins with the formation of the roots and is completed when the teeth reach the occlusal plane of the mouth. During this phase the incisal and/or occlusal portion of the bony crypt is resorbed, the periodontal membrane is derived from the dental sac, and the tooth makes its appearance in the oral cavity. At this time about ⅓ of the root is formed. The crypt adjacent to the forming root becomes the lamina dura.[48]

Sandler[40] has listed data on the eruption of the primary teeth:

Order of Eruption of Primary Teeth and Median Ages at Eruption

TOOTH	MONTH (MEDIAN)
Lower central incisor	7.8
Upper central incisor	9.6
Upper lateral incisor	11.5
Lower lateral incisor	12.4
Upper first molar	15.1
Lower first molar	15.7
Lower cuspid	18.2
Upper cuspid	18.3
Lower second molar	26.0
Upper second molar	26.2

Meredith,[31] in a survey of the literature dealing with studies of the time of and sequence of eruption of the primary teeth, reaches these conclusions:

1. Rarely do infants erupt teeth before the end of the fourth postnatal month.
2. The mean age for eruption of the first tooth is seven and one half months.
3. A few infants do not begin to erupt teeth until early in the second postnatal year.

4. At six months of age approximately 1 child in 3 has 1 or more teeth.
5. At nine months the average child has 3 teeth.
6. At one year the number of erupted teeth is rarely less than 2 or more than 10.
7. Average of erupted teeth at eighteen months is 12.
8. At two and one half years 70 per cent of children have 20 teeth.
   At two and one half years 30 per cent of children have 12 to 19 teeth.
9. There are wide individual differences in the timing of the eruption of primary teeth. Variation of the number of teeth present is greatest during the first half of the second year.
10. Order of eruption:
    Lower centrals
    Upper centrals
    Upper laterals
    Lower laterals
    First primary molars
    Canines
    Lower second molars
    Upper second molars
11. Sex: At all ages from nine months to two years teeth tend to erupt earlier in males than females.
12. Prematurity: Eruption of teeth during the first postnatal year occurs later in infants born prematurely (hypothesis from a limited number of observations).

After the erupting teeth have met their antagonists, they continue to move or erupt in an occlusal direction. The bodies of the jaws grow in height almost exclusively at the alveolar crest, and the teeth have to move occlusally as fast as the jaws grow. Clinically this eruption is masked by the simultaneous growth of the jaws.[48]

If one examines a labiolingual section through the incisal region of the mandible of the six-month stage of life, he can see the relationship of the germs of the primary and permanent incisors, just as the permanent germ is beginning calcification. The germ of the permanent tooth develops from the bud of its primary predecessor just as the primary tooth begins to calcify. The two germs then lie at almost the same level, the permanent lingual to the primary, until the crown of the primary tooth is fully formed and the formation of the root has commenced. This tooth then starts its eruption by moving occlusally, and it leaves the permanent tooth at its original level. The successor remains at this level until its crown is completed and the formation of its root has started. The resulting change in relative position can lead to an erroneous impression of the radiograph unless certain observations are kept in mind. A series of casual examinations of mouths would lead one to conclude that the primary teeth, once they had erupted, stop moving occlusally. With this impression in mind, a series of intraoral radiographs would lead one to the conclusion that the permanent germs were sinking down into the bone. Direct measurements made on serial head-plates of the same individual reveal that the distance between the permanent germs and the lower border of the mandible remains constant while the distance between the apex of the root of the primary tooth and the lower border of the mandible increases, even after formation of the root has ceased and the crown is fully erupted. All of this change in position is the result of the vertical growth of the body of the mandible which takes place mainly on the superior surface of the alveolar process.[9]

This change in position is readily observed radiographically in the relations of

the developing lower second bicuspid to the second primary molar. The permanent germ becomes encapsulated by the appositional growth at the alveolar crest (at about twenty-four months of age); by eccentric movement (buccal growth) it comes to lie in intimate relation to the bifurcation of the second primary molar just prior to its radiographic appearance (beginning maturation or calcification). The permanent germ is probably still somewhat lingually positioned in relation to the bifurcation.[3] This radiographic morphology is usually expected at the chronologic age of two and a fourth to two and one half years. The apices of the roots of the second primary molar are not completed. Some resorption of the surface of the primary roots next to the interradicular septum usually occurs. Probably it arises from the pressure of the developing permanent germ at this stage. During the continued active eruption the primary molar moves away from the developing permanent germ which usually comes to be apical to the roots of the primary molar by the time maturation of the permanent crown is completed, at six to seven years. The areas of early resorption are repaired by the apposition of new cementum and the alveolar bone regenerates.[48] This early resorption and repair may contribute to the difficulty sometimes encountered in tracing the periodontal membrane and the lamina dura in the interradicular area; it also may result in ankylosis. When the germ of the bicuspid begins the formation of the root, its eruption begins; it then overtakes the primary molar; and the resorption of the primary roots begins usually at the apex.

The use of the radiograph can be started comfortably at about the three-year level for the child. By this time, all of the primary teeth have erupted into occlusion, their roots have completed formation, (except cuspids—three and one quarter years), and the occlusal plane is established. The morphologic changes of the primary teeth observed in periodic radiographs from this age are largely the result of caries experience, attrition, and finally their exfoliation.

In a radiographic study of 157 primary school children, it was found that proximal cavities appear the earliest (80 per cent of teeth) on the distal surfaces of the first primary molars and mesial surfaces of the second primary molars. These surfaces, in susceptible children, usually show cavities by the age of six years; proximal cavities on the distal surfaces of the primary cuspids and mesial surfaces of the first primary molars are less likely to develop and tend to develop later, notably around the age of eight years; cavities on the distal surfaces of the second primary molars probably will appear in about 80 per cent of the teeth by the age of seven or eight years; cavities on the mesial surfaces of first permanent molar teeth appear a little later and nearly as frequently. In this study 1117 proximal cavities were diagnosed by clinical and radiographic examination. With clinical examination only, 6.9 per cent of the cavities appeared; 44 per cent by radiographic examination only, and 49.1 per cent were revealed by both examinations. Had only radiographs been used, 93.1 per cent of the cavities would have been detected.[4]

In another study, the caries-experience of approximating pairs of surfaces of primary teeth was found to be almost identical. There is not necessarily any relationship between the caries-experience of the mesial and distal surfaces of a given tooth.[5]

Radiographs can be used to determine the operating space in the primary molars

TABLE 1*

Distances in mm. from Pulp Horns to Enamel Surface†

JAW	1ST PRIMARY MOLAR		2ND PRIMARY MOLAR	
	Mesial Section	Distal Section	Mesial Section	Distal Section
Maxillary.....	2.16	2.54	2.54	3.23
Mandibular.....	2.42‡	2.48‡	2.78	3.18

Diameters of Cross-Cut Fissure Burs

NO.	MM.	NO.	MM.
557	1.00	559	1.50
558	1.25	560	1.75

Note that the individual burs in this series increase in diameter approximately ¼ mm. as the numbers increase.

* Prepared by Dr. Sumner A. Russman.

† Measurements were secured from the tip of the pulp horn in the bite-wing radiograph horizontally to the proximal surface of the enamel, with sufficient elevation of the distal section measurement to correspond with the coronal height of the mesial measurement.

‡ Exhibit no statistical difference between mesial and distal sections.

since the mean difference between the measurements on the radiograph and on the tooth has been found to be statistically insignificant. The mesial section provides less operating space than the distal section of each primary molar with the exception of the mandibular first primary molar, in which instance statistical chance alone may determine which section is the narrower.[38] Some interesting data from this study are found in Table 1.

The use of the posterior bitewing radiograph for observing the problem of loss of space following premature loss of a primary tooth was found to be of sufficient accuracy to permit scientific observations of the spatial changes.[15]

Carious primary teeth exhibit a higher ratio of adventitious secondary dentin than carious permanent teeth regardless of the depth of the cavity, and will affect the morphologic outline of the pulpal chamber.[7]

Gingival radiolucency is a common phenomenon appearing in the radiographs of the primary teeth. The radiolucent area seems to radiate from the cemento-enamel junction; is observable extending a considerable distance occlusally just inside the enamel; and gingivally it stops at the alveolar crest. A second radiograph with a ten degree change in the horizontal angulation will eliminate the gingival radiolucence. The horizontal angulation is not critical when exposing the posterior bitewing film of the primary molars. A slight tendency towards a conical shape of the crowns of the primary molars (as compared with the permanent molars) allows this latitude.[37]

Determination of the condition of the root-ends of the primary teeth is a difficult undertaking. With normal root-ends one must be able to follow the outline of the lamina dura about the root in order to rule out pathologic changes. In the maxilla superimposed anatomic structures make it difficult to trace the lamina dura around the normal roots of the primary teeth.[13]

An anterior primary root end may be superimposed over the radiolucent dental sac of the developing permanent germ.[30] The remains of the dental papilla strongly resemble a granuloma when the root is nearly complete.[13] During the rapid resorption of primary centrals an enigma of diagnosis often may exist when a normal or a pathologic condition (possibly due to trauma) is present.[13]

It often is difficult to differentiate the lamina dura around the roots of the primary molars and particularly around their interradicular surfaces. In a histologic study of the area of the bifurcation of the primary molars, evidence fre-

quently has been detected of injuries followed by resorption and undermining of bone and repair of tissue. In several places the periodontal soft tissue has been found to be compressed between cementum and bone with hyalinization and necrosis of the periodontal membrane. The etiology of the injuries probably is the weakness of the periodontal membrane of erupting and newly erupted teeth. During these early periods the periodontal tissues are not yet fully equipped to withstand masticatory stresses. The clinical manifestations of such traumatic injuries in the primary dentition may be a slight soreness of the erupting tooth and, later on, an ankylosis between tooth and bone by the formation of reparative bone and cementum and finally, radiographic irregularity of the periodontal membrane.[25]

In a recent study, the bifurcation of the primary molar was found to be six times as penetrable as that of the permanent molar. It was observed further that the drugs used in treating non-vital primary molars may penetrate at the bifurcation and produce a radiolucent area in this location.[21]

Pathologic change about the roots of primary molars usually shows at their bifurcation as a loss in continuity of the lamina dura and a distinct radiolucent area found where none normally exists.[13]

Scientific root canal therapy is not feasible in the primary molars as the morphology of the root canals is unpredictable, and invariably unsuitable for treatment. This lack of adaptability is shown by the examination of extracted primary molars. The variation in the morphology of the root canals seems infinite; in few instances is the accessibility of all parts of the canals possible for instrumentation. Radiographs are not dependable for determining the morphology of the root canals of the primary molars.[20]

The eventual elimination of primary teeth is the result of the progressive resorption of their roots by osteoclasts which differentiate from the cells of the loose connecting tissue between the germ of the erupting permanent tooth and the primary root. The stimulus for the resorptive process comes partially from the erupting permanent tooth; the pressure may be exerted against the bone separating the alveolus of the primary tooth from the crypt of its permanent successor and later against the root surface of the primary tooth itself.[1] In addition, a kind of senescence can be observed in the primary teeth themselves, as a result of which even those without permanent successors usually are resorbed and finally eliminated. The resorptive process, as a rule, begins on that side of the root facing the permanent crown; it sometimes occurs on the opposite side also; and it has been known to start first on the opposite side.[23] Parts of the roots of primary teeth which are not in the path of the erupting permanent teeth may escape resorption. Such remnants are most often found in the region of the lower second bicuspid as the roots of the second primary molar are extremely curved or divergent.[1]

The resorption of the roots of the primary incisors and cuspids begins on the lingual surface in the apical third due to the position of the permanent successor, and the labial inclination of the apical third of the roots of all primary anterior teeth.[3] The movement of the permanent successor proceeds incisally and labially and usually comes to lie directly apical to the primary tooth, in which instance resorption proceeds in transverse planes allowing the permanent tooth to erupt in the exact position of the primary predecessor. Frequently the

labial movement of the erupting permanent germ is not complete, and the permanent tooth erupts lingually while the primary tooth still is in place.[1]

The first resorptions do not occur simultaneously in the various groups of teeth of the same denture. Usually the roots of the primary molars are resorbed earlier than the roots of the primary incisors.[24]

Kronfeld[24] set the time of active root resorption of primary teeth as follows (histologically he found it earlier):

TOOTH	YEAR
Central	5–6
Lateral	5–6
Cuspid	6–7
First primary molar	4–5
Second primary molar	4–5

Schour and Massler[43] list the time of exfoliation of the primary teeth as follows:

TOOTH	MANDIBULAR	MAXILLARY
	Age (years)	
Central Incisor	6	7½
Lateral Incisor	7	8
Cuspid	9½	11½
First Molar	10	10½
Second Molar	11	10½

During the process of eruption of the permanent teeth, periods of active movement alternate with periods of inactivity. Consequently the resorption of the primary roots does not occur continuously, but is interrupted by periods of rest. During these intermissions, a reparative new formation of bone and cementum takes place in the resorbed areas.[23] In human primary teeth the pulp does not participate in the process of resorption; the normal pulpal structure and radiographic morphology are preserved until the teeth are lost.[23]

In the last stages of resorption of the primary teeth, the epithelium of the epithelial attachment proliferates along the root surface toward the resorbed areas. Finally it grows around the margins of the primary crown and becomes united with the enamel epithelium of the permanent crown.[23] The walls of the alveolus immediately surrounding the roots of the primary teeth are resorbed concomitantly with the roots.[3]

Causes for deviations from the expected chronological resorption of primary teeth may be listed:[27]

1. Delayed development of the permanent tooth.
2. Non-development of the permanent tooth.
3. Mal-position of permanent tooth, resulting in its subsequent eruption in some location other than its normal one.
4. Mal-position of the permanent tooth that makes it impossible to erupt.
5. The death of the pulp in the primary tooth.

Resorption of root-ends may be classified in accordance with etiology into two main groups:[28]

1. Non-infected type.
   a. Normal resorption as a phenomenon of growth.
   b. Pathologic resorptions arising from malnutrition or a metabolic disease such as rickets.
   c. Pathologic resorption due to occlusal trauma.
   d. Pathologic resorption due to mechanical trauma of an undetermined degree.
2. Infected type.
   a. Local. Pathologic resorptions due to infection or irritation from the pulpal canal of the tooth or from adjacent teeth.

In interpreting the radiographic mor-

phology of the primary root, it may be necessary to consider whether root resorption has started or root formation is being completed. When a small radiolucent area appears at the apex, it may be an area into which dentin and cementum will be deposited to complete formation of the root; it may be caused by a period of rapid resorption of the root, or it may be the beginning of a pathologic lesion.

Since a small percentage of malocclusions are attributable to prolonged retention of primary teeth, a careful scrutiny of the radiograph will detect insufficient resorption and permit planning for extraction. The contribution of submerged primary molars to this small percentage is distinct.[41]

The "submerging" primary molar is thought to be an ankylosed tooth. In some area of the root (even if small and undetected radiographically) the alveolar bone has united with the cementum. Ankylosis prevents the further eruption of the tooth, and consequently the tooth fails to maintain its relative occlusal position as the apposition of new bone continues at the alveolar crest. The primary molar may become completely surrounded by bone. Radiographically and clinically the submerged molar is found progressively farther from the plane of occlusion.[34]

Deviations in the normal development of the primary teeth are rare.[10] Congenitally absent teeth and supernumerary teeth are associated with disturbances occurring during the initiation of development; fused teeth and twinned teeth with disturbances occurring during the stage of proliferation.[10] Endocrinal, developmental, and systemic disturbances may affect the morphology of the primary teeth.

The hormones of certain of the endocrine glands (the pituitary, thyroid, parathyroid, adrenal and sex glands) are known to have an influence upon the skeletal development. Dysfunction of these glands may lead to a disturbance of growth and the metabolism of bone. The teeth and jaws reflect endocrinal dysfunction just as do other parts of the skeleton. Any influence that dysfunction of the endocrine glands may have on the teeth themselves is almost entirely limited to the period of their development and is manifested either by retardation or acceleration of development and eruption. Generally the size of teeth is not affected in endocrinal disturbances. Dwarfs do not have dwarfed teeth, nor are the teeth of the giant necessarily larger than those seen in persons of normal size. The hard structure of teeth can undergo no systemic demineralization or hypercalcification, hence no change will develop in radiographic density except when resorption (internal or external) is present. A summary of the radiographic findings characteristic of certain endocrinal gland disturbances is charted in Table 2.[14, 17, 22, 32, 45, 46, 47]

Inherent factors play an important part in many developmental disturbances. The dental disturbances may be manifested mainly by faulty dental structure or interferences with normal exfoliation and eruption of teeth. A summary of the radiographic findings associated with some of these developmental problems is found in Table 3.[12, 45, 46, 47] A very rare developmental problem, unilateral hypoplasia of the face (facial giantism), can be diagnosed early in infancy from the dental radiograph. The most striking feature is macrodontia, large crowns and large roots, on the involved side. Premature development and eruption and larger jaws on the involved side are characteristic findings.[47]

One of the most common manifestations of systemic disturbance is enamel

TABLE 2

Dental Radiographic Manifestations of Certain Endocrinal Dysfunctions[14, 17, 23, 32, 45, 46, 47]

ENDOCRINAL DYSFUNCTION	STRIKING RADIOGRAPHIC CHARACTERISTICS	SIZE OF JAWS	EXFOLIATION OF PRIMARY TEETH	ERUPTION OF PERMANENT TEETH	DEVELOPMENT OF PERMANENT ROOTS
Hypopituitarism (dwarf)	Retarded development of roots Retarded eruption	Small (especially mandible)	Retarded	Retarded	Retarded
Hyperpituitarism (early onset)	None	Large	Not affected	Not affected	Not affected
Hypothyroidism (early onset) (cretin dwarf)	Retarded development of permanent teeth	Small Underdeveloped	Retarded	Very retarded	Very retarded
Hyperthyroidism	Early loss of primary teeth Osteoporosis	No data	Very early	Very early	Very early
Hypoparathyroidism	Hypoplasia of enamel (if early onset)	No data	No data	No data	May be underdeveloped
Hyperparathyroidism	Disappearance of lamina dura Osteoporosis	No data	No data	No data	Roots may resorb if giant cell tumors develop
Sex glands (Hypofunction)	No data	Overgrowth	No data	Prone to erupt prematurely	No data
Sex glands (Hyperfunction)	Accelerated maturation of skeleton	No data	Very early	Very advanced	Advanced

hypoplasia. Radiographs of erupted or non-erupted teeth show characteristic radiolucent areas where there has been a lack of formation of the enamel. The disturbance affects the formation of the enamel's matrix in the primary and permanent teeth forming during the period of disease, and indelibly indicates the time of occurrence and duration. No specific etiology is known although some are definitely genetic. Exanthematous diseases are not frequently a cause as was commonly thought in the past. Possible etiologic factors are rickets, hypoparathyroidism, and fluorosis, but hypoplasia cannot be predicted with any reliability even in the most severe forms of these diseases. Two thirds of the hypoplasia of enamel develops during the first ten months after birth.[42]

Mottled enamel is found rarely in primary teeth, but severely mottled primary teeth have been observed in areas of excessively high content of

fluorine in the water, 12 to 18 parts per million.[44]

Rickets occurring during the appositional stage of forming enamel may result in hypoplasia of enamel. Retarded development and eruption also are found with severe attacks of rickets which have an early onset. If the onset occurs at six years of age or later, the crowns are normal, but there may be retarded development of roots, delayed eruption of permanent teeth and osteoporosis of both jaws.[47]

Hematogenous osteitis is induced by a metastatic infection most often caused by staphylococcus aureus. The radiographs exhibit a typical finding of osteomyelitis.[47]

Acrosclerosis may be exhibited radiographically by an abnormal increase in the width of the periodontal membrane.[47]

From a report[11] of 5 patients in whom irradiation, by either roentgen ray, surface radium packs, or radon seed implantation, had been used during infancy to arrest pathologic processes occurring in proximity to the developing dentition, it would seem reasonable to assume that irradiation:

1. Can injure the germ to the extent the tooth will not form.
2. Cause dwarfing of permanent teeth.
3. Effect dwarfing of the roots of the permanent teeth that are undergoing development.
4. Effect premature termination of calcification of permanent teeth.

TABLE 3

Striking Radiographic Characteristics of Certain Hereditary Developmental Disturbances of the Skeleton[13, 45, 46, 47]

Albers-Schonberg Disease (marble bone)	1. Great increase in density of jaws. 2. Early reduction or elimination of pulp chambers and root canals. 3. Delayed eruption.
Achondroplasia (dwarf)	1. Non-eruption of primary and permanent teeth has been observed.
Hypertelorism	1. Anodontia.
Cleidocranial dysostosis (hereditary)	1. Delayed eruption or non-eruption of permanent teeth. 2. No resorption of primary roots. 3. Complete or partial aplasia of clavicles.
Hand-Schuller-Christian's Disease	1. Pads of granulomatous tissue form in periapical regions of teeth. 2. Primary and permanent teeth are exfoliated. 3. Exfoliating teeth appear to be floating in space.
Ectodermal dysplasia	1. Congenital absence of all teeth (anodontia). 2. Occasionally some teeth present (oligodontia).
Dentinogenesis Imperfecta (Hereditary opalescent dentin)	1. Absence of pulp chambers and root canals. 2. Permanent roots characteristically very underdeveloped for size of crowns.

DISCUSSION

The comprehensive study of the chronology of the human teeth by Logan and Kronfeld was published in 1933. This study unquestionably was an outstanding example of modern dental research. The method of study was completed with the aid of radiographs, dissection, and (most notably) histologic sections of 25 skulls, 20 of which were two and one half years of age or under. Schour and Massler published their study of tooth development in 1940. Their method of study was not explained explicitly, but seemed to be based largely on histologic study. To these

TABLE 4

Chronology of Human Primary Teeth

(Kronfeld and Schour)

	TOOTH	HARD TISSUE FORMATION BEGINS IN UTERO AT (MONTHS)	AMOUNT OF ENAMEL FORMED AT BIRTH AS INDICATED BY NEONATAL RING	ENAMEL COMPLETED (MONTHS AFTER BIRTH)	ERUPTION (MONTHS)	ROOT COMPLETED (YEARS)
Maxillary	Central incisor	4	Five sixths	1½	7½	1½
	Lateral incisor	4½	Two thirds	2½	9	2
	Cuspid	5	One third	9	18	3¼
	First molar	5	Cusps united	6	14	2½
	Second molar	6	Cusp tips still isolated	11	24	3
Mandibular	Central incisor	4½	Three fifths	2½	6	1½
	Lateral incisor	4½	Three fifths	3	7	1½
	Cuspid	5	One third	9	16	3¼
	First molar	5	Cusps united	5½	12	2¼
	Second molar	6	Cusp tips still isolated	10	20	3

two studies the dental profession is indebted for almost the entire series of tables and charts of the chronology of the human dentition. Logan and Kronfeld's "Chronology of the Human Dentition", and Schour and Massler's "Development of the Human Dentition" are of great value in a radiographic interpretation of the "average" child's dental development. (See Table 4.) However, it is curious that both of these basically histologic studies are in disagreement with clinical studies in regard to the sequence of eruption of the primary laterals. The histologic studies report the mandibular primary laterals preceding the maxillary primary laterals, whereas clinical studies report the eruption of the maxillary primary laterals before the eruption of the mandibular primary laterals. The sequence of eruption of the primary teeth may be of more than mere academic interest. Great importance is placed on the sequence of eruption of the permanent teeth by many orthodontists.

"Physiologic spacing" of the anterior primary teeth between three and five years of age to provide space for the larger permanent anterior teeth is reported rather universally in the dental literature. From some recent studies[6, 16] there appears to be serious doubt that such spacing actually occurs, rather that the primary teeth erupt spaced or closed and do not change before the eruption of the mandibular permanent central incisors. This conflict of observation is a problem primarily of the orthodontists, and it is perhaps in this area that the child's dentist is confronted with his greatest challenge, namely the analysis of the radiographs to detect incipient malocclusions—using cephalograms in addition to the usual films. Considerable attention is being devoted to this phase of diagnosis in the orthodontic literature, and while many of the conclusions available at the present time are opinions rather than well documented conclusions, it appears to be an area worthy of the attention of the pedodontist.

The "physiologic age" of the patient is a useful conjecture. It is achieved by comparing the stage of dental development of

the individual with some standard chart such as Logan and Kronfeld's. Because the apices of the primary roots are completed before radiographs are routinely secured for the child patient, and because the data on resorption of roots of the primary teeth is limited at best, it would appear that the development of primary teeth is of little value radiographically in the assessment of a "physiologic age" for the patient (possibly excepting the observation of the completion of root formation of the mandibular second primary molar).

In 1940 Diamond and Weinmann[19] published a report of their studies of the maturation of the human enamel. They concluded that calcification (or maturation) begins after the completion of the adult organic matrix at the most occlusal point of the cuspal eminence of the posterior teeth, or the most incisal points of the anterior teeth, and proceeds from those points in the direction of the dentinoenamel junction, radiating laterally in all directions until the entire incisal or occlusal surfaces are fully calcified. It then continues along the peripheral surfaces in the direction of the gingival line, until the entire enamel is calcified fully. It may be stated that in accordance with this mechanism of formation of the enamel the existing tables of formation must be reestablished on the basis of a clear differentiation of timing between the formation of organic matrix of the enamel and calcification.

Summary

From a review of the literature certain pertinent data relating to the morphology of the primary teeth have been reported. The development of the primary teeth has been outlined from the time of the first radiographic appearance until exfoliation. The radiographic findings, relative to the changing morphology of the primary teeth, have been emphasized. This information, as assembled, appears to be helpful to the children's dentist in his radiographic interpretations.

Conclusions

1. A thorough understanding of the morphologic changes of the primary teeth during their life span is essential for accurate radiographic diagnosis.

2. Distinguishing between normal and pathologic changes in the root-end areas as depicted in radiographs of the primary teeth often is difficult.

3. Serial radiographic examinations are essential for observing the growth and maturation of the individual child's dentition.

4. Radiographs are not dependable for determining the morphology of the root canals of the primary molars.

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Things to Do in Florida

Wendell Whetstone, General Chairman of our 1954 meeting in Miami, writes:

"There are many attractions for tourists and convention-goers in Florida, but because most of our members will have only a limited time to spend, we'd like to suggest the following most interesting selection of sights to see and places to dine. We suggest you bring along these pages of your Journal for ready reference. And to be sure you'll have the finest accomodations possible, write now to the Shore Club Hotel for your reservations!"

Sights to see:

Florida Cypress Gardens—near Winter Haven. America's tropical wonderland, where azaleas, camellias, gardenias and other rare tropical plants bloom in profusion along winding pathways and the banks of lagoons and canals through which quiet electric boats travel. Four *water ski shows daily* featuring the Aquamaids and champions.

Silver Springs—near Ocala. Shown through glass-bottomed boats at frequent intervals from sunrise to sundown daily. Jungle cruise speed-boat ride, bathing, seven motor courts, four restaurants, airport nearby, thirteen gift shops.

Marine Studios—at Marineland on Florida State Road A1A. Marine Studios presents the ocean floor through 200 portholes. The most amazing display of live marine life ever assembled lives in two giant oceanariums under conditions comparable to that of the open sea. Open daily from 8 a.m. until sunset.

Lightner Museum of Hobbies—in St. Augustine, heart of downtown on US 1. This municipally owned "collection of collections," gift of O. C. Lightner, is a mecca for hobbyists. Thousands of varied exhibits, a revelation in human interest for all age groups. Open daily until 9 p.m.

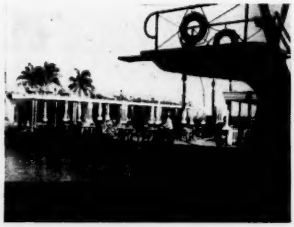
Alligator Farm—St. Augustine, across Bridge of Lions on State Highway A1A, scenic oceanshore boulevard en route to Marineland. World's largest collection of living alligators and crocodiles. Site of Hollywood filmings. African ostriches, monkeys, Florida Wildlife Museum, rare birds, giant Galapagos tortoises. Gator wrestling. Free guide service. Open 8 a.m. to 6 p.m.

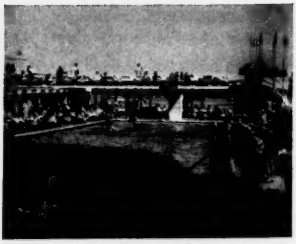
Oldest House in North America—in St. Augustine, 14 St. Francis Street. Florida's most historic attraction. This venerable edifice has seen life under four flags—Spanish, English, Confederate and American. Guided tours daily. Hours 9 a.m. to 6 p.m.

McKee Jungle Gardens—just south of Vero Beach on US 1. Tropical splendors of six continents, eighty acres of jungle wonder. See orchids growing outdoors, strangler fig, baby alligators. House of Giants. Spanish Kitchen. Free jungle guides. Orchid nurseries now open to public. Large collections of water lilies, hibiscus. Open 8 a.m. to 4:45 p.m.

Monkey Jungle—twenty-two miles south of Miami. "Where humans are caged and monkeys run wild." Swarms of monkeys living wild in thick tropical jungle. Displayed in cages is one of America's most complete collections of monkeys and apes, from tiny marmoset to gorilla. 10 a.m. to 5:30 p.m. daily.

Rainbow Springs—situated four miles north of Dunnellon, US 41. Beautiful natural attraction. From specially designed submarine boats, visitors get fish's eye view of famous "Lost World Underwater" — rainbow-hued plants, twenty-pound bass, rare leopard garfish. Alpine cottages and lodge. AAA and





The beautiful Shore Club and Nautilus Hotels, headquarters of the A.S.D.C. and Academy of Pedodontics respectively, at Miami Beach. Make your reservations before September 1, through the A.D.A. Housing Bureau, 320 N.E. Fifth St. Miami, Florida, being sure to mention the A.S.D.C. The management will not guarantee to fill our requests for reservations after September 1, so don't delay—write now!

Duncan Hines recommended. Spectacular sixty-foot waterfall.

Oriental Gardens—Jacksonville, Florida Highway 13, just off US 1. Superbly lovely eighteen-acre estate overlooking magnificent St. Johns River. Outstanding formal landscape, flowers all year. Big winter and spring azalea show, summer hydrangea display. River terrace, oriental buildings, sunken lake, continuous chime concerts. Open 8 a.m. to 6 p.m.

Bok Singing Tower—near Lake Wales on US 27. A gift to the American people from Edward Bok, a man who loved nature and all beauty. Located on Iron Mountain, highest spot in Florida. Is visited annually by a million or more tourists.

Musa Isle—in Miami, N. W. 16th Street and 25th Avenue. Authentic Seminole Indian village open year around. Guided tours, alligator wrestling hourly. Crocodiles, zoo, tropical birds and gardens. Seminole and Western Indian handicraft. Take City Bus 35 or sightseeing boat, *Seminole Queen*, Pier 6, City Yacht Basin.

Sunken Gardens of St. Petersburg—in St. Petersburg. Wander along the rustic paths of one of Florida's finest tropical gardens, where tall palms stand etched against a cerulean sky in a fairyland of rare, fragrant flowers and exotic plants from all over the tropical world. Don't fail to bring your camera.

Boat Cruises—Miami Beach, 24th and Collins Avenue. Everglades, jungles and Fort Lauderdale. Indian village and tropical gardens. Residential islands of Miami and Miami Beach. Florida Keys and Deering Estate. Boats leave hourly.

Ross Allen Reptile Institute—at Silver Springs. Where dangerous rattlesnakes are "milked" for venom by one of the world's great herpetologists. Lectures and demonstrations hourly with snakes, alligators, crocodiles and turtles. Wild animal ranch and Seminole village in season.

Nature's Giant Fish Bowl—at Homosassa Springs. Here you will see an amazing concentration of salt-water game fish of many varieties along with several fresh-water species. This is a natural phenomenon unexplained by scientists. Fish come into the great spring from the Gulf and are seen from subsurface gallery windows.

Parrot Jungle—Red Road. Miami. A natural jungle of tropical beauty in which gorgeously colored macaws, cockatoos, pheasants, peacocks, gouras, etc., fly and move about free. Trained macaws pose on your shoulders and perform unbelievable tricks. The new flamingo lake and hibiscus garden is a veritable photographer's paradise.

Weekiwachee Springs—west of Brooksville on US 19. Weekiwachee features the world's only underwater mermaid show. Continuous performances from 9 a.m. until 6 p.m. the year round. Mermaids stay underwater for thirty minutes at depths from twenty-five feet to 100 feet! A photographer's paradise. Gift shop, restaurant, year-round swimming in seventy-four-degree water.

Sarasota Jungle Gardens—north of Sarasota on US 41. One of the world's famous tropical botanical gardens, with thousands of varieties of exotic and indigenous plants augmenting a native jungle setting. The most beautiful flock of flamingoes in the USA; other colorful birds, uncaged, from every continent.

Ringling Museums—three miles north of Sarasota, just off US 41. The magnificent John and Mable Ringling Museum of Art, with its collection of paintings. Open daily 9 a.m. to 4:30 p.m. The fabulous Ringling Residence, and the Museum of the American Circus. Open daily 10 a.m. to 4:30 p.m. Owned and operated by the State of Florida.

Thomas A. Edison Home—in Fort Myers. The Florida estate of America's greatest inventor is now open to the public. Garden is fantastic maze of plantings gathered from all parts of tropical world. Laboratories, graceful home with archaic furnishings remain exactly as Edison left them. Open daily 9 a.m. to 4 p.m.

Everglades Wonder Gardens—Bonita Springs, three miles south of Fort Myers on Tamiami Trail, US 41. An all-Florida exhibit. Two thousand snakes, alligators, crocodiles, animals and birds. Learn about life in the mysterious Everglades—nature's wonderland. Beautiful gift shop.

Miami Serpentarium—south of Miami on US 1. Features the largest collection of cobras and other snakes in the U.S. Each day king cobras are fed and milked for venom. Shows are hourly, with demonstrations of other poisonous reptiles and animals. Lectures and laboratory techniques explained on how venom is used commercially.

Places to dine:

ARMENIAN

Armenian Restaurant, 1030 15th Street, Miami Beach.

AUSTRIAN-GERMAN

The Garden, 2235 S. W. Eighth Street. Weiner schnitzel, chicken mornay. Wide range of menu selections. Serving lunch and dinner. Closed Mondays.

Hofbrau Haus, Hallandale, near Gulfstream Track, Miami Beach. German-American cuisine. Seafoods, shrimp, lobster, steaks and chops.

CHINESE

Cathay House, 227 22nd Street, Miami Beach.

China City, 1642 S. W. Eighth Street.

Fu Manchu, 327 71st Street, Miami Beach.

Limehouse, 215 Sunny Isles Boulevard, Miami Beach.

Shangri-La 15 N. E. Third Avenue. Authentic Chinese dishes. Also steaks, chops and chicken American style. Lunch and dinner.

CUBAN

Club Latino, 38 N. W. 5th Street.

FRENCH

Chez Leon, 1630 N. E. 1st Court.

Continental (Anton's), 6915 S. W. Bird Road. French onion soup, frog's legs, snails, filet mignon, pompano. Variety of choices.

Victor Bidone, 1334 18th Street, Miami Beach.

GENERAL

Bahama Steak House, 3890 N. W. 36th Street. Charcoal broiled steaks, resin-baked potato, other menu choices.

Betty's Restaurant, 1440 Biscayne Boulevard. Sirloin steaks with baked potato and chef salad; shrimp, Maine lobster, king fish; special salads; pastries. Dinner only.

Black Caesar's Forge, Ludlum Road and Coral Reef Drive. Unique atmosphere in an area steeped in the legend of the pirate Black Caesar. Specializing in charcoal broil—steaks, chops, chicken or fish. Resin-baked potatoes, chef salad with Black Caesar dressing. Dinner only. 6:30 to 11:30 p.m. Phone for reservations.

Brickell Bridge Restaurant, 550 Brickell Avenue. Family-type restaurant, specials on steaks and roast sirloin. Club breakfasts, special business lunches, wide range of choice for dinner, including chicken and fish.

Burdines, 22 East Flagler Street. Famous Hibiscus Tearoom—serving lunch and afternoon tea. Special plates—meats, salads, sandwiches and desserts. Also luncheonette on Miami Avenue, serving breakfast and lunch, open from 8 a.m. till 5:30 p.m.

Byron's 55 East Flagler Street. Breakfast, lunch and dinner. Wide variety complete meals. Soda fountain and snacks. Open 7:30 a.m. till 11 p.m. Serving quality merchandise seven days a week.

Candlelight Inn, 3131 Commodore Plaza, Cocoanut Grove. Roasts and steaks. Stone crabs and oysters in season. Shrimp sizzle, most delicious and unusual dish.

Clayton's 19 N. W. 1st Street. Family-type restaurant. Steaks, chops, chicken, seafood. Breakfast, lunch and complete dinners. Open 6 a.m till 8 p.m.

Cottage Inn, 2235 Biscayne Boulevard. Complete menu of dinners. Specializing in chicken in the rough—golden brown fried chicken, shoestring potatoes with *hot biscuits* and honey.

Cy's Place, 84 Miracle Mile, Coral Gables. Hot corned beef and roast beef sandwiches. Famous for ten-inch Kosher franks and de luxe hamburger baskets.

Embers, 245 22nd Street, Miami Beach. Baby ribs, chicken, duck, prime steaks and chops, lobster, pheasant, prime ribs of beef. Unusual ready-to-serve specialties.

Fan and Bill, 220 21st Street, Miami Beach. Well known—serving dinner until 10:30 p.m. Meats and fish, daily specials, wide selection of menu choice.

Grandma's Kitchen, 11495 Biscayne Boulevard and 5240 S. W. 8th Street. Complete farm dinners, country-fried chicken, fresh fish, country-style ham. Serving meals in Miami since 1920.

Hamburger Circus, 318 Miracle Mile, Coral Gables. Colorful atmosphere, decorated like a circus midway. Featuring beef specials: steaks, hamburgers made of meat only, a tartarburger (pure raw ground beef), hamburger platters, etc.

Harvey's Restaurant, 720 West Flagler Street. Family dining, wide menu choice. Breakfast and lunch and full-course dinners.

Hawthorne's Fine Foods, 9104 N. W. Twenty-seventh Avenue. Family-type meals, wide range of choices. Children's plates.

Hickory House, Liberty Avenue and 23rd Street, Miami Beach. World-famous for twenty-five years. Only two in existence, New York City and Miami Beach. Complete steak dinners, chops, seafood.

Holleman's Restaurant, 670 N. W. 79th Street. General family dining. Home seasonings. Complete variety of choices. Fresh chicken. Breakfast, lunch and dinner.

Howard Johnson's. Well known and popular family restaurants. Over a dozen places in the Greater Miami area, from South Miami to Sunny Isles. See classified section of the Miami phone book under "Restaurants" for complete listings.

Hurricane Harbor Lounge, 24 Crandon Boulevard, Biscayne Key. Serving one meal only. Steak, potato, salad, bread and butter, coffee. Open 5 p.m. until 11 p.m.

Jamaica Inn, 320 Crandon Boulevard, Biscayne Key. Featuring "The Prime Rib." Miami's new supper club. Showplace in an exotic setting.

Jerry's Restaurant, 3401 N. W. Forty-second Avenue. General dining, good menu choice, fried chicken, special steak dinners. Caterer to the airlines. Adjacent to 36th Street International Airport.

Junior's, 2947 Collins Avenue, Miami Beach. Specials and a la carte. Breakfast, lunch and dinner. Open 8 a.m. until 2 a.m. Seven days.

Kenny's, 200 N. E. Second Avenue. Serving club breakfasts, special lunches and complete dinners, salads and sandwiches. Wide choice of selections. Specialty: Danish pastry. Also cake and pies, all baked on the premises. Open twenty-four hours daily.

Keystone Restaurant, 6234 N. E. Second Avenue. Prime meats, baked ham,

roast lamb, oven-fried chicken, seafood. Variety of menu choices.

La Casita Teahouse, 3540 Main Highway, Cocoanut Grove. Southern home dinners, widely varied menu. Specialty is full-course chicken dinner.

La Pena, 7966 S. W. Bird Road. Steak house—serving one complete dinner. Mr. Sirloin or Miss Filet, with stuffed baked potato seasoned with chives, cheese butter and cream, appetizer tray, homemade pie and beverage. Dinner only. Seven days.

Lighthouse, Bakers, Haulover, Miami Beach. Steaks, chops, fish, complete dinners. Seafood specialties. Open from noon to midnight.

Mayflower, 80 S. E. Biscayne Boulevard. Nationally known from coast to coast. Famous for coffee, doughnuts and light snacks. Serving breakfast, lunch, dinner, supper.

My Brother's Place, 1210 Ponce de Leon Boulevard, Coral Gables. Steaks, pork chops, ham steak, broiled chicken, shrimp creole on Fridays. Baked and french fried potatoes, special green salad, dessert. Dinner only, 5 to 9 p.m. Closed Thursdays.

New Elite, 203 N. E. First Avenue. Club breakfasts, special lunches, complete dinners with variety of choices, meats, chicken, fish. Open 6 a.m. till 11 p.m. Closed Sundays.

Parham's, 7300 Collins Avenue, Miami Beach. Specializing in barbecue ribs and Southern fried chicken. Open twenty-four hours a day, serving breakfast, lunch and dinner.

Peter's Drive-Under, 3799 N. W. 36th Street. Dining room and car service. Chicken dinners, shrimp, barbecue ribs, sandwiches.

Pickin' Chicken, 160 Lincoln Road, Miami Beach. Southern fried chicken is the specialty. Other locations.

Red Coach Grill, 1455 Biscayne Boulevard. Famous for excellent food and beverages. Varied menu. Open 4:30 p.m. daily until midnight.

Richard's, 1 N. E. 1st Street. Tearoom and soda grill. Serving during store hours. Lunch at popular prices. Meat, chicken, fish, sandwiches, hamburgers and fountain specialties. Best known for old-fashioned apple pie.

Robin Hood Inn, 3601 Biscayne Boulevard. Steaks a specialty. Complete menu. Unique atmosphere. Serving lunch and dinner. Open at 11:30 a.m. daily.

San Juan Restaurant, 2436 S. W. 8th Street. Complete dinners. Restaurant and bar. Orchestra for dancing after 9 p.m.

S. H. Kress and Company, 54 East Flagler Street. Cafeteria open for lunch and the afternoon. Continuous service. Beautiful salad counter, choice of six meats and eight vegetables daily.

Smith Brothers, 203 N. W. 36th Street. Steak, roasts, complete variety of choices.

The Ribbery, 394 Giralda Avenue, Coral Gables. Special shrimp cocktail. Barbecue ribs, fried chicken, barbecue lobster. Lunch and dinner.

Tower Restaurant, 1501 S. W. 8th Street. American-cooked foods, variety dinners, special snacks and sandwiches. Breakfast, lunch, dinner, supper. Open 7 a.m. till 1 a.m.

Town Restaurant, 153 N. E. 1st Street. Restaurant and delicatessen. Complete meals, a la carte, sandwiches, etc. Serving breakfast, lunch and dinner. Open 7 a.m. till 2 a.m. Closed Sundays.

Tyler's 1257 West Flagler Street, 1818 N. W. 36th Street. 1526 Ponce de Leon Boulevard, Coral Gables. General dining, meats, chicken, seafood, complete meals. Specialty—strawberry whipped cream pie.

Walgreens, 200 East Flagler Street. Cafeteria serving breakfast, lunch and dinner, 7:30 a.m. to 8 p.m. Hot dishes at

lunch and dinner, complete choice of selections. Tearoom downstairs serving hot lunch and dinner.

Wolfie's, 2038 Collins Avenue, Miami Beach, and 1 Lincoln Road. A la carte—also special platters daily. Famous Kosher corned beef sandwiches. Very fine desserts. Serving breakfast, lunch and dinner. Open 7 a.m. till 2 a.m.

Italian

Battista's, 142 S. W. Thirty-seventh Avenue. Featuring spaghetti, lasagna, ravioli and pizza. Also steaks, chops, chicken, fish. Lunch and dinner. Open 11:30 a.m. to midnight, seven days a week.

Caruso's, 167 West Flagler Street.

Picciolo, 136 Collins Avenue, Miami Beach. Complete menu—steak, chops, fish and all favorite Italian dishes. Open from 1 p.m. to 1 a.m.

Riccio's, 991 N. E. 79th Street.

Valenti's, 1306 N. W. Seventh Avenue.

Villa Vivolo, 150 Sunny Isles Boulevard, Miami Beach. All popular Italian dishes and steaks, chops and seafood.

Kosher

Mendelshohn's, 2 Lincoln Road, Miami Beach.

Isaac Gellis, 1141 Washington Avenue, Miami Beach.

Mexican and Spanish

Don Julio, 136 N. E. 20th Street. Brand-new idea in seafood. Conch enchilada—not wrapped, but served open, Cuban style. Vegetables with conch meat cooked in a hot sauce—surrounded by wafer-thin slices of potato. Hot stuff! All Latin-American special for men. Spanish and Mexican cuisine. Authentic Pan-American food, home cooked.

El Bolero Restaurant and Lounge, 3181 Coral Way. Aged steaks, broiled chicken, fried Mexican jumbo shrimp.

El Toledo, 204 Biscayne Boulevard.

Scandinavian

Old Scandia, 125 Perirz Avenue, Opalocka. Variety of complete dinners, a la carte, steaks, chops, chicken and fish. Specialty, smorgasbord. Open for dinner and supper. Dinner from 5 to 10 p.m. and smorgasbord until midnight.

Seafood

Captain Tom's, 28 N. W. North River Drive.

Chesapeake Seafood House, 3906 N. W. 36th Street. Raw Bar—oyster and clams. Steamed clams, oyster specialties. Maryland deviled crabs. Serving eighty-two fish items. Open seven days a week.

Clam Box, 74th Street and Collins Avenue, Miami Beach. Steaks, chicken, ribs, steamers, Maine lobster. Full-course dinners.

Hobby House, 4860 S. W. 8th Street. Family dining, specializing in lobster and shrimp and other seafood dishes.

Joe's Stone Crab, 227 Biscayne Street, Miami Beach.

Lagoon Restaurant, 488 Sunny Isles Boulevard, Miami Beach. Maine lobster, steaks, chops, seafood.

Loeffler's, 280 Alhambra Circle, Coral Gables.

New England Raw Bar and Seafood House, 12727 Biscayne Boulevard. Hard-shell crab feast weekly. Fish fry on Wednesdays. Next door to glass-blowers.

Seven Seas, 101 S. E. Second Avenue. Specializing in fish. Complete meals, steaks, prime ribs of beef, chicken, chops, salads, desserts. Sandwiches, etc. Great variety of choices. Open from 11 a.m. to 11 p.m.

Shrimp Place, 2154 N. W. Seventh Avenue. Golden fried Key West shrimp, grilled kingfish, scallops, lobster, seafood combination plate. Steaks, chops, etc. Excellent homemade pies.

The Operative Management of a Difficult Case

A. Norman Cranin, D.D.S.* and Samuel L. Cranin, D.D.S.†

IN PAST years the difficult or handicapped patient has presented serious problems in management. Because of this, he has not been in a position to avail himself of the benefits of careful dental treatment. Today, however, with the increasing number of dentists with hospital affiliations, the problem of treating the difficult patient has been simplified. The patient may be admitted to the hospital for general anaesthesia, and under these conditions, many conservative procedures are made possible which as office operations would have been impractical and even dangerous.

The following case is presented to illustrate the technique and to encourage further and more widespread reliance on general anaesthetics when indicated.

Case Report

A seven year old, well developed, well nourished, white female was brought unwillingly into the office, having fractured both permanent maxillary central incisors at their cervical thirds in an automobile accident the previous day.

Present Illness. The child had been seen on several previous occasions in a state bordering hysteria. A highly sensitive child, she presented a disturbed psychological picture aggravated by severe oral problems. A pronounced stammer was exaggerated on her visits for dental examination to a point of complete speechlessness. She was also a constant and habituated thumbsucker. This habit had contributed to a marked superior maxillary protrusion with a twenty millimeter overjet. In fact, this orthodontic deformity was undoubtedly responsible for the severity of the injury. The child was heavily sedated with 0.1 Gm. secobarbital to permit examination.

Examination. The upper lip showed considerable abrasion with some edema and ecchymosis. The mucous membrane was still oozing with a sero-sanguinous exudate. The two central incisors were fractured at the cervical thirds, with a loss of most of the crowns, and both pulp chambers were occupied by blood clots. The teeth were not mobile. Pulp tests were not performed. Roentgenograms and photographs (see Figure 1) were taken, and the child, who was now fully reacting, was dismissed.

Roentgenograms revealed little more than the fact that the pulps were clearly exposed.

In light of the patient's psychological status, it was suggested to the parents that if the teeth were to be treated and restored properly, the child should be taken to the hospital. They agreed, and the patient was admitted to The Mount

Fig. 1

* Dental and Oral Surgery Staff, The Mount Sinai Hospital, N. Y. C.

† Associate Orthodontist, Unity Hospital, Brooklyn, N. Y.

a b c d

FIG. 2

Sinai Hospital on the following afternoon. The aims of operation were as follows:

a. to save the teeth by pulp canal therapy in a one treatment session.
b. to prepare the crown stumps and canals for the reception of cast bases and copings.
c. to obtain an impression on the operating table which would permit completion of the jacket crowns without subjecting the patient to another operative session.

Operation. The child was sedated and anaesthetized with nitrous oxide-oxygen-ether. An endotracheal tube was passed and pharyngeal packing was moistened and placed about it. The operative site was isolated with cotton rolls and painted with tincture of metaphen. The canals were opened, the vital pulps extirpated, and large files were used in cleansing and debriding the walls. After carefully sterilizing and drying the canals, they were filled with guttapercha points and chloropercha. Roentgenograms were taken at each stage (see Figure 2 a, b, c).

The coronal portions were then prepared and bevelled, and the canals were prepared to receive posts. Fourteen gauge platinum-iridium post wire was fitted and placed into each pulp canal and copper band impressions were taken of each stump with these posts in position. A plaster impression was then taken over the band impressions and the entire assembly was removed as a unit (see Figure 3). The chambers were sealed temporarily and the patient was returned to her room. She recovered without incident and was discharged the following morning.

Laboratory Procedure. Amalgam dies

FIG. 3

FIG. 4

were made and positioned in the plaster impression before separation from their copper bands. The model was then poured and the result permitted construction of the cast bases on the platinum posts, and following this, the fabrication of acrylic jacket crowns. Preparations were then made for cementation.

Second Operation. The patient was sedated in the office with seconal and atropine. Nitrous oxide-oxygen-trichlorethylene anaesthesia was administered. The cementation required but a few minutes since it was simple to keep the operating field clean and dry. Roentgenograms were taken (see Figure 2 d), and the child was awakened and dismissed with her new restorations. She has functioned well ever since, and has even allowed herself to be photographed (see Figure 4). Her mother has reported an improvement of oral habits and a complete cessation of thumb-sucking.

SUMMARY

The hospitalization and operative management of a difficult dental patient has been reviewed. The operative and laboratory technics were designed to reduce the required number of visits to a minimum. The carefully controlled anaesthetization made the permanent retention of these teeth a reality, whereas office procedure would have meant probable extraction.

The prostheses were placed in better alignment than the child's natural teeth had been, and it is assumed that the cessation of thumb-sucking is a direct result of this improvement.

Most patients exhibiting great anxiety or behaviour difficulties may be treated in a similar manner. There should be no hesitation on the part of the practitioner to employ these or similar methods if they are in the best interests of his patient.

2120 Ocean Avenue
Brooklyn, New York

Unit News

Arkansas

National Children's Dental Health Day was a public relations success in Arkansas thanks to a few hard working members of the A.S.D.C. and state and district chairmen of the Dental Health Committee of the Arkansas State Dental Association.

Dr. Roy M. Wolff of St. Louis spoke to the Central District Dental Society on "Childrens' Dentistry". Dr. J. R. Luten, Jr. of Little Rock spoke to the Fort Smith Dental Society on "Pedodontic Pointers".

Numerous dentists spoke before civic clubs, on T.V. and Radio to bring the children's dental health message to the public.

A.S.D.C. members presenting table clinics at the state dental convention on April 7, 1954 were:

Dr. Claude Phillips—Orthodontics and Cephalometrics
Dr. E. H. Dildy and Dr. E. G. Harrington—X-ray Program in the Schools
Dr. Roy Dunn—Model Aids
Drs. Alstadt, Smith and Casey—Orthodontics
Dr. Joe N. Dillard—Clinical Photography
Dr. J. M. and C. W. Fowler—Implant Dentures
Dr. Maurice Friedman—Endodontics
Dr. C. L. Flynt—Local Anesthesia for Children
Dr. J. R. Luten, Jr.—General Anesthesia for Operative Dentistry

Kentucky

The Kentucky unit has created new interest throughout the state by holding its meetings in various cities. During the past few months meetings were held in Owensboro, Mammoth Cave and Ashland. Topics covered at these meetings were, "Restoration of Badly Decayed Molar Teeth" and "Fractured Anterior Teeth".

The clinicians participating include Maurine Bolton, Joe Wheat, Lyman Wagers, Henry Wilbur, Bill Carpenter, Curke Coomer and Art Mickler.

Officers of the Kentucky organization are:

Lyman Wagers, Lexington—President
Art Mickler, Louisville—Vice President
Bill Carpenter, Lexington—Secretary-Treasurer

Ohio

At the Annual Meeting of the Ohio State Unit the following were elected to office:

President—Thos. H. O'Reilly, Cleveland
Vice-Pres.—Mitchell S. Goodman, Columbus
Sec'y Treas.—Finn F. L'Orange, Cleveland

Instructive and interesting talks were delivered by Dr. E. Carl Miller, retiring President of the Ohio Unit and Dr. George W. Teuscher immediate past President of the A.S.D.C.

The Columbus Ohio chapter of the American Society of Dentistry for Children held a meeting on January 12th at the University Club.

The following officers were elected:

Dr. Wm. P. Engelman—President
Dr. Mitchell S. Goodman—Vice President
Dr. Harold L. Monett—Secretary-Treasurer

Following the business meeting Dr.

LeRoy Johnson gave an interesting and informative talk on fractured anterior teeth.

Texas

The Texas Society of Dentistry held its annual meeting on April 26, 1954 at the Baker Hotel in Dallas, Texas. This was a joint meeting with the Southwestern Society of Dental Medicine. At the 10:00 AM lecture, Dr. Stephen Weisz of Dallas, Texas spoke on "Psychosomatics". At the 2:00 PM lecture, Dr. Harold B. Crasilneck spoke on "Dental Hypnosis and its Clinical Applications." He also gave several scientific demonstrations of hypnosis. Dr. Crasilneck did the hypnotising while a local dentist gave the demonstrations upon the patient.

The State Dental Association of Texas presented Dr. Benjamin Kletzky of Denver, Colorado who presented an excellent lecture demonstrated with slides on Children's Dentistry.

The TSDC then met at noon for its annual luncheon and business session. New Officers for the year 1954–1955 were elected as follows:

H. O. Simmons, Jr., D.D.S., Llano, Texas—President

Eugene Cash, D.D.S., 3537 West Seventh, Fort Worth, Texas—Secretary-Treasurer

Program Committee Chairman for 1955, Dr. Geo. Bohslav, Austin, Texas.

Arrangements Committee for 1955, Dr. Julian B. Raffkind, and Dr. Ned Synder, both of San Antonio, Texas.

Michigan

In spite of a terrific snow storm approximately 40 brave souls ventured to the March meeting to hear Dr. Richard Wallen, Associate Professor of Psychology at Western Reserve University. If the weatherman had treated the Ann Arbor area more favorable, all of the sixty-five who had made reservations would have enjoyed Dr. Wallen's talk, "Psychology Relationship between the Dentist and the Child Patient".

Alabama

The annual breakfast meeting of the Alabama Chapter was held Tuesday morning, April 27 at the Buena Vista Hotel in Biloxi, Mississippi. Doctor Sidney B. Finn, Director of the Children's Clinic, at the University of Alabama School of Dentistry, spoke on "Management of the Child Patient". Doctor William C. Morgan of Birmingham, President, presided during the business meeting which followed. The new officers elected are:

President—Dr. Julian Jones, Montgomery

Vice-President—Dr. Charles W. Lokey, Jr., Birmingham

Secretary-Treasurer—Dr. Glenn Yelverton, Mobile

In his acceptance speech Doctor Jones urged all members of the Alabama Chapter to take the initiative in promoting fluoridation for fluoride-deficient communities in the State.

Northern California

Several members of the Northern California unit of A.S.D.C. journeyed south to attend the pedodontic meeting at Arrowhead Springs Hotel, from March 3 to 7, 1954. Dr. John Brauer and Dr. Ralph Ireland were the headline speakers. Those attending from this area were: Porter Danford, Louis DeMeo, Ken McKinnon, Walt Mandler, Bill Weims, John Sowden, Chuck Sweet, Bill Strangman and Don Laston.

On April 26, a breakfast meeting was held at the Fairmont Hotel in San Francisco, by the Northern California Unit. Dr. J. Tochini presented an excellent

program, with Dr. Ralph Ireland presenting some of the pedodontic research activities being conducted at the University of Nebraska.

Dr. Don Laston and Dr. Fran Summers, head of pedodontic department at U.S.C., were back to Ann Arbor, Michigan to attend a course in pedodontics, given by Dr. Ken Easlick at the University of Michigan, May 17 to 31, 1954.

The Fourth Annual Pedodontic Seminar was held at Los Laureles Lodge in beautiful Carmel Valley, from May 16 to 19, 1954, with Dr. Carl Ellertson as chairman for this year. Eighty pedodontists from the state of California were in attendance. Clinics were conducted on a seminar basis with round table discussions by the members. The two headline speakers were Dr. Neuman from the University of Rochester and Dr. Albert Davis of San Francisco on "Chemistry of Calcification of Bone and Teeth—a New Theory", and "Cleft Palates, Etiology, Dental Problems and Treatment" respectively. A recreation day was also included for this meeting.

Pennsylvania

Mock Grand Jury Investigation of Philadelphia Dental Programs for Children, Sponsored by: Philadelphia Society of Dentistry for Children Collaborating with Council on Dental Health of Philadelphia County Dental Society at Philadelphia County Medical Society Building, 301 S. 21st Street, May 3, 1954, 7:30 P.M.

Presiding Judge—Thomas P. Fox, D.D.S., President, Philadelphia Society of Dentistry for Children

Attorney for the Commonwealth—Albert L. Borish, D.D.S., Chairman, Council on Dental Health of Philadelphia County Dental Society

Attorney for Council on Health & Welfare—J. L.T. Appleton, D.D.S., Chairman, Advisory Committee, Health Division

Clerk of the Court—Edwin S. Heins

Grand Jury

Foreman: Linwood G. Grace, D.D.S., Dental Director, Pennsylvania State Dept. Health

Mrs. David Shuman, Chairman, Health Committee, Home and School Association

Charles H. Patton, D.D.S., Trustee, American Dental Association

John Peterson, Director, Health Division, Health & Welfare Council

Eligio R. Cerino, D.D.S., President, Philadelphia County Dental Society

Ruth H. Weaver, M.D., Director, Division of Medical Services, Board of Education

Lester W. Burket, D.D.S., M.D., Dean, School of Dentistry, University of Penna.

G. D. Timmons, Dean, School of Dentistry, Temple University

Dorothy Wood, M. D., District Health Officer, Phila. Dept. Public Health

Leigh Hebb, Municipal Research

Sarah Reeder, R.N., B.S., in Education, Supervisor of Nursing, Public Schools

Eleanor Lefson, R.N., B.S., M.A., Director of Nurse Education, Phila. Dept. Public Health

Anna Leibfried, Visiting Nurse Association

Philip Klein, Chairman, Federation of Community Councils

Witnesses

Abram Cohen, D.D.S., Supervisor, Dental Services, Public Schools, *Dental Needs of Public School Children*

John P. Looby, D.D.S., Dental Supervisor, Parochial Schools, *Dental Needs of Parochial School Children*

The following administrators answered four questions describing their programs:

What types of treatment are provided by your agency?

What children do you treat?

How do you obtain patients?

How can other agencies contribute to your program?

Fred J. Lucchesi, D.D.S., Chief, Department of Dentistry, Phila. General Hospital

J. M. Wisan, D.D.S., Chief, Dental Health Section, Dept. Public Health

Rudolfo Colella, D.D.S., Clinic Director, Phila. Mouth Hygiene Association

Raymond Werther, D.D.S., Chief, Dental Service, Childrens Hospital

Robert E. DeRevere, D.D.S., School of Dentistry, University of Pennsylvania

Ernest Ritsert, D.D.S., Professor Pedodontics, School of Dentistry, Temple University

Martin Entine, D.D.S., Chief, Dept. of Dentistry, Kensington Hospital

Victor H. Frank, D.D.S., Attending Dental Chief, Southern Division, Albert Einstein Medical Center

Manual M. Album, D.D.S., Dental Consultant, Phila. Society for Crippled Children

Morris Kellner, D.D.S., Chief, Dentistry for Children, Northern Division, Albert Einstein Medical Center

Congratulations, Dr. Thomson!

(*Excerpt from a letter to Fellows of the American College of Dentists from Harry S. Thomson, President of the College.*)

"The changes that have developed during the last few years in our professional thinking, teaching and in our every-day practice are apparent to all of us. We have been reading about, or sitting in on, Round table discussions, forums, seminars, and workshops. They inform us of changes that are occurring in our professional attitudes and practice, and inspire us with a new conception of human relations and our responsibilities in dentistry for children. . . .

Dentistry for children is one of the most important factors in Preventive Dentistry. It shows us results that are tangible, results that we can record and tabulate, results that we can see, and results that show us the value of our efforts and treatment. Through it we experience a feeling of gratification that we have contributed something to the better health and greater happiness of a little child. . . .

Some of you will say, "I practice a specialty. I treat only adults." But do not forget the value of education in preventive dentistry. Therefore you have the greater opportunity of teaching to parents, Dentistry for Children. You can present very convincing facts to parents and grandparents by demonstrating to your patient that the discomfort and disability he is now undergoing might have been prevented had we known, years ago, the importance of early dental treatment for children.

Someone has said, "Dentistry for Children is considered a specialty in dentistry, when it should be the basis and foundation of all dental teaching and practice."

What would happen if the two thousand Fellows of our College seriously joined in a crusade for preventive dentistry and dentistry for children?

Think of it—that will do much. Talk of it—that will do more. Practice it—that will do *most.*

Anesthesia for Children

MARTIN A. SALAS, D.D.S.
Philadelphia, Pa.

ONE must bear in mind that anesthesia through the years has advanced hand in hand with surgical procedures. For a while with the highly advanced specialty of surgery, men lost track of their greatest adjunct, anesthesia. Today, whether it be in the medical or dental school, the hospital, the laboratories of the manufacturers, or by research men of anesthesia, new drugs, equipment and techniques are constantly being developed; it is a tremendously vast and interesting field.

The management of a child patient in the dental office sometimes presents a temporary problem. One can't expect to accomplish a service unless there be some degree of cooperation by this patient. Some children, as well as adults, have been in and out of various dental offices quite often. A child should be told, not necessarily in specific terms, that something is going to be done. It is rather unjust to surprise a child as the so-called bad experience can have its effect for years to come. Many potentially good patients have been driven away from dental offices by unwarranted experiences during their childhood days.

With this in mind, how can we help to make the child patient more compatible? I believe the solution is preanesthetic and to some degree a psychological approach. We therefore consider that pre-medication is the beginning of the anesthetic period.

When we consider the agents to be used, it is not too bold to say that we are able to use any drug that an adult can tolerate. There are, however, some qualifications and we must consider the following factors in planning dosage: The case history, age, weight, physical condition, metabolism rate, type of anesthetic to be used, and estimated length of surgery.

When we use potent sedatives on ambulatory patients, our most common type, we must remember that these people are going to walk out of our offices. Above all, for medico-legal satisfaction, someone must be with them.

What do we plan to accomplish with pre-operative medication? We have four desirable effects: 1. Psychic; 2. Heighten pain threshold; 3. Decrease metabolism; 4. Reduce toxic reactions.

Types of Pre-medication:

1. Opiates—as morphine, codeine, demerol, etc. Reduce metabolism and toxic reactions.
2. Belladonna—as scopolamine and atropine. Has a psychic effect; works well with the opiates.
3. Barbiturates—as Seconal and Nembutal. These are of prime value in our dental offices. They allay fear and tend to raise the pain threshold.

These barbiturates for children are of special value as they can be given in elixir manner. As an elixir we usually give a child of 4–10 years of age, four teaspoonfuls or one grain, one half hour prior to surgery. A child 10–14 six teaspoonfuls or 1½ grains. Remember that barbiturates not only serve their purpose for general anesthesia, but also reduce the toxic reactions of local anesthetics.

Anesthetics are of many types and we

classify them according to their route of administration. In dentistry we have the following:

I. Topical Anesthetics
II. Local Anesthetics:
    1. Infiltrative
    2. Conductive or block
III. Inhalation Anesthetics
IV. Intravenous Anesthetics

Topical Anesthesia

Oral tissue as well as many other epithelial tissues were designed for excretion and not for absorption. Histologically, the mucous membrane of the mouth is covered with stratified squamous epithelium, many cell layers deep. One can readily see how difficult it must be for a topical anesthetic to penetrate these many layers of cells and reach the nerve endings before the blood vessels and lymph channels carry it away. In addition we have the thick viscid saliva not only being excreted by the large salivary glands, but also by the many mucous glands. This of course tends to dilute any topical anesthetic we may use.

There have been scores of topical anesthetics on the market. Many reports have come out and most literature and investigators are in no agreement relative to their merits. The trend of opinion is that topical anesthetics are psychological in nature to the hypersensitive patient prior to needle insertion. We find, therefore, that there is still need for a safe and practical topical anesthetic and further studies to find such a drug are indicated.

Local Anesthesia

As with any anesthetic, the ultimate success depends not only on the skill of the operator, but also in his patient approach, his so-called chair-side manner. This is especially true with children. The discomfort that a child undergoes is directly proportionate to good anesthesia and a successful operation.

Deception should be avoided if at all possible. The only indication to deceive the child is when we use a needle for local anesthesia. We never permit a child to see the needle, and make sure we use a sharp needle at all times, concealing it in a cotton roll and out of sight, usually in the hands of the assistant who is behind the child. The average child cannot readily distinguish between pain and pressure. In lieu of topical anesthesia, we rub the area to be injected with the ball of our finger just prior to needle insertion, and pull the tissue taut if possible. Conductive anesthesia is preferred as it covers more teeth under as few injections as possible. Procaine, or a form of such, is used in most instances. Adrenalin content has no bearing except if there are signs of decompensation. The young heart can show either a rheumatic or congenital deformity. These are primarily valvular difficulties and therefore infection must be guarded against to avoid sub-acute bacterial endocarditis.

Children become frightened easily and scream even though there may be no pain associated with the operation. This reaction cannot be avoided and exemplifies the need of patient education, psychological approach, and the definiteness of procedure of treatment.

I would casually mention in our anesthetics—hypnotic anesthesia. Hypnosis is not recent; it has a long history. However, with the advent of chemical agents its place in dental or surgical practice has been limited. It is not easy to produce this type of anesthesia. Not all patients are receptive to it and actually the time consumed in preparation of such a patient takes the doctor away from his practice in helping many other patients. I am in no position to discuss its merits,

but from the literature that I have read on this subject, I feel a much more serious scientific study of hypnotic anesthesia must be made.

If time can be spent on patients, I would rather see the psychological approach of the psychiatrist, who mentions R.S.V.P. R for Reassurance, S for Suggestion, V for Ventilation or Catharsis, and P for Participation. Hypnosis, therefore, is questionable, when we have R.S.V.P.

Some anesthetists do not understand the needs of the oral surgeon. For oral surgery we require a light surgical anesthesia. We need not necessarily have the abolition of all reflexes; we do want rapid induction and short recovery. Most of our surgical procedures are short and therefore our requests of anesthesia are short and rapid in nature, bearing in mind at all times our surgical-anesthetic responsibilities. However, there are times when duration of anesthesia, whether in the office or in the hospital, is necessary.

Inhalation Anesthetics

The American Dental Association as well as the American Medical Association recognized Horace Wells, a dentist, as the discoverer of anesthesia. Nitrous Oxide was the first scientific attempt at anesthesia. Usually the texts say that it is a weak anesthetic, but I believe this is a misnomer. We understand what weakness is, but this actually implies that oxygen is diminished very often less than that found in the atmosphere, before narcosis is obtained to give us surgical anesthesia. Danger, therefore, is not from the gas itself, but from the anoxia or oxygen need. Convenience of administration (whether it be of fast or slow induction), its wide range, less disturbance to metabolism, and few systemic contraindications for its use have made this agent our selection for clinical anesthesia. There isn't any drug, except those given by vein, producing its effect more rapidly or pleasantly, or which leaves the body more quickly, than does Nitrous Oxide.

For short duration, as with children, it is ideal. If we can gain the confidence of the child, it also can be used for analgesic purposes, as for the preparation of cavities, needle injections, and often for the lancing of abscesses.

One additional recommendation for use of Nitrous Oxide plus oxygen is its synergistic action with other agents. With Vinethene, tri-chlorethylene, ether, and intravenous barbiturates, it is likewise our choice for a balanced anesthesia sequence.

We have other gas anesthetics available to us in dentistry, but few are indicated for our dental offices. In passing I must mention ethylene, cyclopropane, and ether.

Ethylene can be used for dental operations, but is indicated in very few cases. It is similar to Nitrous Oxide, but a little more potent. It has the disadvantage of high explosiveness, shows hypoxia, and has a disagreeable odor. Its advantages are that a little more oxygen can be given with it and muscular relaxation, which we so rarely require, is greater than with Nitrous Oxide. Of importance is its explosiveness even to a spark of a mallet and chisel or bone and tooth burrs.

Cyclopropane is comparatively new as far as dental anesthesia is concerned. It differs from Nitrous Oxide in that its signs of anesthesia and mode of action are often in direct contrast to Nitrous Oxide. For this reason I feel that only an anesthesiologist or one qualified to handle the systemic hazards should give it. It is best used in the hospital, in selected cases, where endotracheal intubation can be used, where cardiac irregularities, and the post-operative hypo-

tension associated with this gas can be handled. Its advantages are the high percentage of O used. It is rapid in onset and pleasant and its recovery is fairly rapid. The disadvantages are that a closed system must be used. It is explosive, excitement and shock have been known to occur, and of all the gas anesthetics, this one may cause laryngeal spasm.

For those cases requiring more relaxation, to fortify Nitrous Oxide plus oxygen, and the child requiring prolonged anesthesia—ether, a volatile agent, is still the drug of choice. Because of its irritating nature, other agents are used and then the change is made to ether. Its advantages are its wide degree of safety, potency, respiratory stimulant, inexpensive, and excellence for children. Its disadvantages are slow induction with objectionable odor, it is explosive, slow recovery, and tends to cause nausea and vomiting. In a dental office you can readily see its inadvisability. In an anesthetic sequence ether is excellent if need be after the induction with Nitrous Oxide and oxygen. According to recent experiments ether is classified as the most explosive, followed by ethylene, and finally cyclopropane.

There are other volatile agents that we must consider. The first of these is Vinethene, an excellent anesthetic agent for our purpose. This can be administered by either one of two methods. For children below the age of five or six we use the open method. This is done with a mask of the proper size and the Vinethene is regulated through a screw cap by drop method. We never push Vinethene and the liquid should not touch the face.

Our second method of administering Vinethene is the semi-open method. This can usually be done in an ether jar on our apparatus. Using Nitrous Oxide and oxygen for induction we supplement Vinethene to augment our gases. Vinethene may increase secretions and if we plan to use this for five minutes or longer, I would suggest that one of the belladonna group be administered preoperatively.

Advantages of Vinethene are induction and maintenance is easy, pleasant, and rapid, with no excitement; circulation and respiration are not affected to any marked degree. Disadvantages are its high volatility and therefore explosive nature, increased secretions, and true signs of anesthesia are difficult to follow.

The second of these volatile agents is Trichlorethylene. We have on the market today Trimar and Trilene used in dentistry. It resembles vinyl-ether (Vinethene), but is not as volatile nor will it produce excess secretions. It should not be used alone to produce surgical anesthesia. It therefore should be used only in an open or semi-closed system.

We know of its value as a therapeutic agent in some of our neuralgias. It has been used alone to produce excellent analgesia in obstetrics. Much is underway on the research of this agent and some excellent results have been reported. We have used this for children as an adjunct whereby, with Nitrous Oxide and oxygen and Trichlorethylene, we have kept children under for over an hour in a dental office for general dentistry.

Intravenous Anesthesia

The intravenous barbiturates can be used for children of all ages who have veins that are accessible and suitable for vena puncture. Even though the administration may be very easy, this does not necessarily imply that the anesthetic drug is completely safe. We must remember that disadvantages are depression of

respiration, coughing, sneezing, laryngospasm, and bronchio-spasm; prolonged elimination is a little higher, but secondary injections are not preferred. I would rather see pre-medication of a child to allay his fears and proceed with anesthetic agents of choice. Many oral surgeons will not give children below the age of twelve intravenous barbiturates as their findings indicate resultant hallucinations during recovery from the agent.

Induction by the I.V. route followed by our many adjuncts is the ideal. We still can't accurately follow true anesthetic signs as we can with the inhalation agents. Therefore, used together we obtain the allaying effect of the I.V. and the systemic anesthetic effect of the inhalation agent. In combination, therefore, we can maintain a high degree of oxygen.

Conclusions

The basis of fear is the fear of pain itself. To overcome these fears we have many drugs. To overcome the pain we likewise have many agents available to us. Our colleagues of the medical profession have seen the importance of good dental health and the means available for us to maintain such health. This trend brings a great deal of satisfaction to the dentist and his profession. We dentists must not become complacent for there are still great strides to be made.

We no longer think of anesthesia as a "shot" or a "gas", for anesthesia today, is a vast field of endeavor. There are so many agents that the agent itself does not render as much importance as the care and skill we use for the administration of said agent or combination of said agent.

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THE CONSTITUTION AND BY-LAWS*
of the
American Society of Dentistry for Children

THE CONSTITUTION

Article I—NAME

The name of this Society shall be THE AMERICAN SOCIETY OF DENTISTRY FOR CHILDREN.

Article II—PURPOSE

The purpose of this Society shall be the advancement and dissemination to the profession and the public of knowledge of all phases of Dentistry for Children.

Article III—MEMBERSHIP

Section 1. Membership in this Society shall be of five classes: active, associate, student, honorary and honorary associate. Only active members may vote and hold office.

Section 2. ACTIVE membership in the Society shall be limited to members of the American and Canadian Dental Associations.

Section 3. ASSOCIATE members may be elected by the State Units or by the Society and shall be designated as those working in related fields or as dental internes in recognized institutions.

Section 4. STUDENT membership: students of an accredited dental school may be elected by the State Units or by the Society.

Section 5. HONORARY membership may be conferred by the Society on any person who has contributed in an exceptional manner to the advancement of Child Health.

Section 6. Honorary associate may be conferred by the Society on members of foreign societies of dentistry for children.

Article IV—STATE UNITS

Section 1. State Units or Societies which may be organized in conformity with the general plan and purpose of this Society shall be enrolled as component Units by a majority vote of the Executive Council upon receipt of an application for affiliation. Classification of membership in component Units shall be the same as that of this Society.

Section 2. State Units must have a minimum of 20 active members. Where less than 20, the members shall be considered members of the Society at large.

Section 3. State Units shall send an official delegate or representative to each annual meeting of the Society. One delegate shall be sent to represent each 50 members or fractional number thereof.

Section 4. There may be one official Unit for each constituent of the A. D. A. but each Unit may have several component groups where desirable and organized under the guidance of the constituent Unit. They should meet jointly as a constituent Unit at the annual state meeting.

Section 5. There shall be a meeting of the delegates representing the State Units at a time prior to the annual meeting of the Society. This meeting shall be presided over by the President-

* As amended September, 1953.

Elect and its purpose shall be the discussion of matters relating to the organization, programs and activities of the State Units. This body may offer such resolutions to the Executive Council or to the Society as it deems advisable.

Article V—OFFICERS

The officers of this Society shall be a President, a President-Elect, a Vice-President, a Secretary-Treasurer, and an Editor.

Article VI—EXECUTIVE COUNCIL

There shall be an Executive Council, consisting of eleven members, with authority to govern the Society in all matters between annual meetings.

Article VII—MEETINGS

Section 1. An annual meeting of the Society shall be held at the time and place of the meeting of the American Dental Association. The exact time and place shall be specified at least three months before the annual meeting.

Section 2. Special meetings of the Society may be called; (1) by the President at the written request of twenty per cent of the active membership; (2) by the unanimous vote of the Executive Council together with a majority vote of the delegates from the State Units.

Article VIII—QUORUM

At a regularly called meeting of the Executive Council, General Business Session or a Committee Meeting, those present shall constitute a quorum.

Article IX—OFFICIAL PUBLICATION

The Society shall publish a Journal to be known as the "Journal of Dentistry for Children" which shall be the official publication of the Society, and shall be published quarterly.

Article X—AMENDMENTS

Section 1. This constitution may be amended at any official meeting of the Society by a two-thirds majority vote of all active members present, provided a copy of such proposed change has been sent to each member at least four weeks prior to such meeting. (Due publication of such change in the Journal of Dentistry for Children shall constitute proper notice.)

Section 2. Amendments may also be made at any annual meeting of the Society by the unanimous vote of all active members present and voting.

Section 3. By-laws may be adopted, amended, or repealed at any official meeting of the Society by a two-thirds majority vote of active members present and voting.

THE BY-LAWS

Article I—MEMBERSHIP

Section 1. All applications for active, associate, and student membership shall be made in writing. When submitted to the Secretary and accompanied by the annual dues applicants automatically become members in the designated class.

Section 2. In States having active Units, membership in the State Unit is contingent upon membership in the American Society of Dentistry for Children.

Section 3. The name of a candidate for honorary membership shall be presented, with reasons therefore in writing, to the Membership Committee. The Membership Committee shall present this with its recommendations to the Executive Council, and, upon the unanimous approval of

the Executive Council, the candidate's name shall be presented to the membership at the next annual meeting. The approval of two-thirds of the active members present and voting shall elect the candidate to honorary membership. Upon his election, he shall be presented a certificate of election.

Section 4. Honorary associate membership may be conferred by the Executive Council upon members of Societies of Dentistry for Children of foreign countries when such societies are organized in conformity with the general purpose of the American Society.

Article II—DUES

Section 1. Dues for active members shall be five dollars per year, payable the first day of January. Each State Unit shall pay, on or before April 1, five dollars to the Secretary-Treasurer of this Society for each active member.

Section 2. Honorary members shall not be required to pay dues, and shall be granted all the privileges of membership with the exception of voting and holding office.

Section 3. Dues for associate members and student members shall be two dollars per year, payable the first day of January or through each State Unit on or before April 1.

Section 4. Dues for honorary associate members shall be two dollars per year, payable on January 1st of each year.

Section 5. Any member, not a member of a component Unit, who becomes delinquent in the payment of his dues shall be notified by the Secretary at the end of sixty days. Should he continue to be delinquent for thirty days thereafter, his membership shall be declared forfeited.

Section 6. Dues of new members paid during the last quarter of the year shall apply as of January 1st following.

Section 7. A proportionate amount of dues of each paying member shall be designated by the Executive Council as a subscription to the Journal of Dentistry for Children entitling him to receive that publication.

Article III—ELECTION OF OFFICERS

Section 1. (a) All officers except the Editor shall be elected by ballot at the annual meeting, their names having been placed in nomination either by the Nominating Committee or from the floor, and shall assume office at the close of that meeting. (b) The Editor shall be appointed by the Executive Council.

Section 2. No member of the Society shall be eligible for office who has not been a member of the Society for at least three years, but this rule shall not apply to election to committees.

Section 3. No member shall hold the same office twice in succession, except the Secretary-Treasurer and the Editor. The filling of an unexpired term shall, in this regard, be considered a term of office.

Section 4. Permanent or temporary vacancies occurring in office between the election and the next meeting shall be filled by the President for the unexpired term of that office.

Section 5. All nominees for the office of president, president-elect, and secretary-treasurer must have served at least one term as a member of the Executive Council or as a member of a standing committee of the American Society of Dentistry for Children prior to their nomination.

Article IV—COMMITTEES OR COMMISSIONS

Section 1. Members of the following standing committees or commissions of five members each (six for Membership and State Units) shall be elected by the Executive Council: Membership and State Units, Public Relations and Publicity, Professional Relations, School and Dental Examining Boards, Community Dental Programs, Constitution and By-Laws and Budget. They are to be elected in the following manner: one for one year, one for two years, one for

three years, one for four years, and one for five years; and thereafter *the President* shall appoint one each year for a term of five years. It shall be the duty of the President to designate the chairman of each standing committee, with the exception of the Membership and State Units Committee, the chairman of which shall be the President-Elect.

It shall be the duty of each standing committee to submit to the President, within four months after the annual meeting, a full report of its activities. If such report, or absence of a report, indicates that a committee is not functioning adequately, it shall be mandatory for the President to replace any or all members of such committee as circumstances may indicate necessary to activate it. It shall be the duty of each chairman to present in writing a report of his committee activities to the Executive Council at each annual meeting.

The duties of the Committees shall be as follows:

Membership and State Units: To increase the membership of the Society; to organize new State Units and to assist State Units in their activities and the increasing of their membership. To receive all recommendations for honorary and honorary associate membership and make appropriate recommendations to the Executive Council.

Public Relations and Publicity Committee: To foster cooperation of Society and lay groups organized for the promotion of child health; to stimulate and foster the award of grants to the Society; to give proper notices to the newspapers and other publications where publicity is desired; to assist the proper committee of the American Dental Association in the promotion of the annual national children's dental health day; and to recommend speakers for lay groups.

Professional Relations Committee: To coordinate the activities of the Society with activities of the American Academy of Pedodontics, the American Association of Orthodontics, the American Society of Pediatrics, the American Academy of Pediatrics and other medical and dental organizations which are organized for the promotion of child health; to maintain a roster of approved clinicians on pedodontics and designate suitable clinical programs for state and local dental meetings which emphasize the practice of pedodontics.

School and Dental Boards Committee: To keep a permanent record of the time and the degree of emphasis allotted to the teaching of pedodontics in the various dental colleges; to work with the Council of Dental Education of the American Dental Association in raising the requirements and standards of pedodontic teaching with the giving of proper emphasis to this subject; to maintain liaison with the various state dental boards and dental examiners of other agencies with the view of giving pedodontics proper evaluation in the examination and licensing of dentists.

Community Dental Programs Committee: To study community dental service and dental educational programs for children and set up desirable standards for such programs; to assist when possible in the formation of programs in local communities by working with the State Units when the advice and assistance of the committee is requested; to maintain liaison with the Council of Dental Health of the American Dental Association so that the Society may assist the Council in the promotion of dental health.

Constitution and By-Laws Committee: This committee shall be composed of past presidents and the new member each year shall automatically be the retiring president. This committee shall serve to study the constitution and by-laws and keep it abreast of the developments of the organization, accept suggestions for changes or additions from members for consideration, and report its recommendations.

Budget Committee: To prepare and recommend a budget to the Executive Council for its approval on the day preceding the official and annual meeting. It shall also be the duty of this committee to observe closely the management and handling of the budget and report its findings to the Executive Council.

Section 2. There shall be an Editorial Board of three active members elected by the Executive Council, one for one year, one for two years, and one for three years, and thereafter one

each year for three years which shall be the term of this office. This board shall act in an advisory capacity to the Editor of the Journal, and shall be responsible with the Editor for the editorial policies of the Journal. The Editorial Board shall act to gather material suitable for publication in the Journal of Dentistry for Children.

There shall be a Publication Commission of four active members elected by the Executive Council, one for one year, one for two years, one for three years, and one for four years, and thereafter one each year for four years which shall be the term of this office. This commission shall be responsible to the Executive Council, and shall be responsible for the distribution of the Journal. They shall examine and recommend on its cost and shall establish the policy on advertisements suitable for insertion in the Journal, based upon standards set by the American Association of Dental Editors. This committee shall also establish the scale of cost of these advertisements. It shall be the responsibility of this committee to appoint a Business Manager whose function it will be to obtain advertisements and to recommend the enlargement or curtailment of the Journal or Journals. Upon approval of the Publication Committee contract for such services shall be negotiated by the President and Secretary.

Section 3. The President shall be empowered to appoint such special committees as he deems needful at any time; or, on the majority vote of the members present at any meeting he shall appoint committees as they direct.

Section 4. At least thirty days prior to the annual meeting of the Society, the President shall appoint and publish the personnel of two committees: (1) A Nominating Committee composed of three members to present candidates for election to office for the following year. (2) An Auditing Committee composed of three members to audit the Treasurer's books.

Section 5. Within sixty days after the annual meeting of the Society, the President shall appoint a program and local arrangements committee. The duties of this committee shall be to develop the scientific program for the next annual meeting; to make the necessary local arrangements including hotel accommodations for all clinicians; to publish and mail to the membership, at least 30 days prior to the meeting, the program. The printing of the program in the Journal of Dentistry for Children shall be deemed sufficient when the publication date approximates the indicated time.

Article V—RULES OF ORDER

The Society shall be governed in all matters not covered by the Constitution and By-Laws by Robert's "Rules of Order Revised."

Article VI—DUTIES OF OFFICERS

Section 1. It shall be the duty of the President to preside at all meetings of the Society; to approve all bills for payment; sign all documents; appoint and notify all committees not otherwise provided for; present an annual address, and perform such other duties as are customary to his office.

Section 2. The President-Elect shall arrange the program of and preside at the joint meeting of the State Unit delegates and Executive Council.

Section 3. The Vice-President shall assume the duties of the President in his absence.

Section 4. It shall be the duty of the Secretary-Treasurer to keep a record of the transactions of the Society and of the Executive Council; to attend to all correspondence; keep all official letters received, with a copy of replies to same; to send notice to all members of time and place of meetings; to notify officers, applicants for membership, committees, and others of their election or appointments; and, to keep an accurate list of members, together with their addresses.

He shall be responsible for the collection of all monies due the Society from its members and component Societies.

At the expiration of his term of office he shall turn over to his successor all records, books, or other properties relating to his office and perform all other duties pertinent to his office.

He shall keep all monies belonging to the Society, and pay out same, provided the money is in hand, upon the presentation of a properly approved voucher.

He shall furnish a bond, at the expense of the Society, for an amount designated by the Executive Council.

He shall, ninety days before the annual meeting, notify the secretary of each Unit of the number of official delegates and alternates to which they are entitled and shall provide them with official forms. The secretary of the Unit shall in turn, thirty days before the annual meeting, return these forms with the names of delegates and alternates and duly endorsed by the Unit president or secretary.

The Unit secretary shall then be mailed proper credentials for each delegate and alternate, and voting privileges of these delegates and alternates at annual meetings shall be dependent upon the presentation of these credentials at the time of registration.

He shall make an accurate report of the Society's Treasury at the annual meeting. The Secretary-Treasurer shall be paid a salary of one dollar per year.

Section 5. At the conclusion of each officer's term of office and at the annual meeting, each officer shall surrender his manual to his successor.

Article VII—EXECUTIVE COUNCIL

Section 1. The Executive Council shall consist of the President, the President-Elect, the Vice-President, the two immediate Past-Presidents, the Secretary-Treasurer, the Editor, and four other members to be elected the first year as follows: two for one year, and two for two years, each being replaced as his term expires by a member elected to the Council for a term of two years which shall be the term of this office thereafter.

The Editor shall hold his office from year to year at the pleasure of the Executive Council. The Editor shall have the power to appoint an assistant Editor, and contributing Editors for a term of one year.

Section 2. Those members of the Executive Council present at a regularly called meeting shall constitute a quorum. Special meetings of the Council may be held at any time and place that a quorum may be gathered, each member of the Council having received notification.

Section 3. The Executive Council shall conduct the business of the Society between meetings. It shall adopt the budget for the Society and approve the expenditure of the Society's money by appropriation to the various committees or other special appropriations. It shall elect such officers and committees as are specified in the By-Laws. It shall render a full and complete report to the Society of all of its actions as well as of all matters brought before it, which when approved by the Society becomes the action of the Society.

Section 4. The Executive Council, meeting and voting jointly with the delegates at the annual meeting, shall elect a member of the Board of Pedodontics. Candidates for election to this position shall be diplomates of the Board.

Section 5. The Executive Council shall be empowered to select and recommend for approval to the delegate body an executive secretary whether it be an individual or a commercial firm with salary, length of contract and duties to be clearly specified. Upon approval of the delegate body contract for such services shall be negotiated by the President and Secretary. It shall be the duty of the Executive Council to arrange for suitable office space to be designated as Headquarters of the Society.

American Society of Dentistry for Children

OFFICERS 1953–54

HUGH KEENAN ..... *President*
WILLARD T. HUNNICUTT ..... *President-Elect*
HENRY M. WILBUR ..... *Vice-President*
ALBERT ANDERSON ..... *Secretary-Treasurer*
ALFRED E. SEYLER ..... *Editor*

EXECUTIVE COUNCIL

HUGH KEENAN
WILLARD T. HUNNICUTT
HENRY M. WILBUR
ALBERT ANDERSON
ALFRED E. SEYLER
HAROLD K. ADDELSTON '55
GEORGE W. TEUSCHER '55
C. F. TUMA '54
HAROLD A. MAXMEN '55
LAWRENCE R. BURDGE '54
EARL L. LAMPSHIRE '54

STANDING COMMITTEES

Membership and State Units

WILLARD T. HUNNICUTT, *Chairman* '54
411 Doctors Building, Atlanta, Ga.
LAWRENCE BURDGE '54
63 E. Front St., Red Bank, New Jersey
EARL L. LAMPSHIRE '55
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REGINA DAVID '58
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